



# St. George's

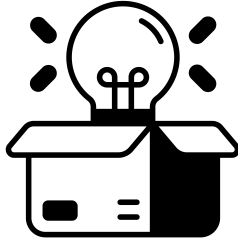
**Church of England Primary School**



## **DT Curriculum**

# Our **DT** Intent

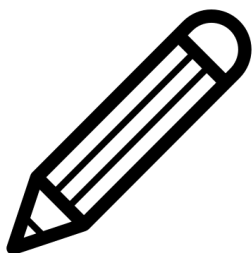
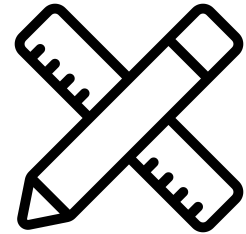
## To think like a designer...



St. George's 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, modelling and testing, and to be reflective learners who evaluate their work. We aim to build an awareness of the impact of design and technology on our lives and encourage pupils to become resourceful.

Our DT scheme of work encourages:

- A strong focus on developing both DT skills and knowledge.
- Critical thinking, with the ability to evaluate both their own work and others'.
- A growing understanding of design and technology terms and vocabulary.



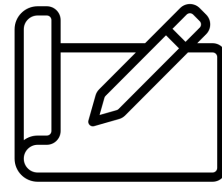
Our scheme of work enables pupils to meet the end of key stage attainment targets in the National curriculum. The aims also align with those in the National curriculum.

# DT Knowledge and Skills

Our scheme of work has a clear progression of skills and knowledge within the five attainment targets for DT in the National Curriculum. Our Progression of skills and knowledge shows the skills taught within each year group and how these develop to ensure that attainment targets are securely met by the end of each key stage.

## Design

Designing purposeful, functional, appealing products based on design criteria. Pupils will generate, develop and communicate their ideas through both discussion and sketches or diagrams.



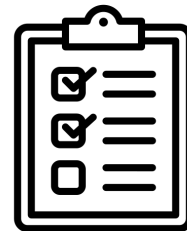
## Make

Lessons require pupils to select and use a range of tools and equipment to perform practical tasks, including cutting, shaping, joining and finishing.



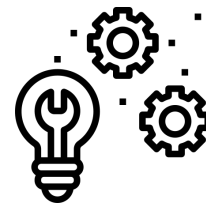
## Evaluate

Our curriculum requires pupils to evaluate a range of existing products, as well as evaluating their own ideas and products against a design criteria, encouraging them to become reflective learners. In KS2, pupils will consider the views of others to improve their work.



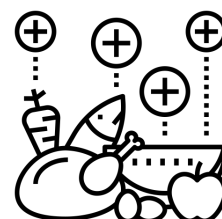
## Technical Knowledge

Children will learn to build structures; use mechanisms and mechanical systems; use electrical systems; and to program, monitor and control their products.



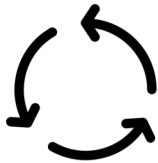
## Cooking and Nutrition

We want children to know the basic principles of a healthy balanced diet and where food comes from. Pupils will use a range of cooking techniques and learn how ingredients get to us.



# DT Knowledge and Skills

We have designed our scheme of work so that it is a spiral curriculum, with essential knowledge and skills revisited with increasing complexity, allowing pupils to revise and build on their previous learning.



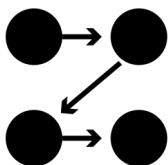
## Design, Make, Evaluate

The three main stages of the design process (Design, Make, Evaluate) are outlined in the DT National curriculum. Each stage is underpinned by technical knowledge which encompasses the contextual, historical and technical understanding required. Cooking and nutrition has a separate section, with a focus on specific skills and techniques.



## A Variety of Outcomes

Lessons incorporate a range of strategies from independent tasks, paired and group work, and practical, hands-on activities. This variety means that lessons are engaging and appeal to a variety of learning styles.



## Sequential Lessons

Children will be given opportunities to develop their knowledge and skills by revisiting core subject knowledge and applying it practically. Our units are divided into six core areas, repeated as children move up through the school. They are: mechanisms; structures; textiles; food; electrical systems (KS2); and digital world (KS2).



## Broad and Balanced curriculum

Our DT curriculum is designed so that children experience the fundamentals of art through broad and balanced units, including the exploration of the work of a wide range of artists and makers. Each unit works towards the national curriculum attainment targets: this allows pupils to develop their knowledge and skills around the

# DT Knowledge and Skills

Our scheme of work ensures pupils are ready to study DT at Key Stage 3 with a range of skills and knowledge.

We hope children develop a creativity to be designers with the ability to reflect and critique products in the world around them, as well as appreciating the process of continually evaluating and editing their work to improve it.

## Knowledge Retrieval

The DT Scheme of Work enables material to be presented clearly, allowing discussion about what is being taught. Teachers check pupils' understanding systematically, identify misconceptions accurately and provide clear, direct feedback using the teaching and learning strategy. In doing so, teaching is adaptive to pupils' needs. Teachers may give whole class feedback at the start of a lesson.

The scheme of work has been designed to help pupils to remember long term the content they have been taught and to integrate new knowledge into larger ideas. This is reflected in lessons with knowledge retrieval questions where prior knowledge will be needed in the learning studied.



## Assessment

Assessment is ongoing through each unit within the scheme of work. Retrieval questions enable children to recall knowledge from their long term memory so that it can be integrated into new learning. The use of multiple questions enables children to rapidly recall knowledge with low cognitive overload. At the start of each unit, pupils complete a quiz to assess the knowledge children do and do not know. As a result, lessons are tailored according to the outcome. To assess progress, the quiz is repeated at the end. This enables teachers to assess, if children have met the curriculum attainment targets.



# DT Knowledge and Skills Progression

The DT Progression of skills and knowledge gives an overview of the skills and knowledge covered in each phase and strand and how these skills are developed in order to enable pupils to reach the end of key stage outcomes outlined in the National curriculum.

Within each key stage, the DT curriculum covers the following strands: design, make, evaluate, technical knowledge and cooking and nutrition.

		Year 5	Year 6
		What could be healthier?	Come dine with me
Skills	Design	<ul style="list-style-type: none"> <li>Adapting a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients.</li> <li>Writing an amended method for a recipe to incorporate the relevant changes to ingredients.</li> <li>Designing appealing packaging to reflect a recipe.</li> </ul>	<ul style="list-style-type: none"> <li>Writing a recipe, explaining the key steps, method and ingredients.</li> <li>Including facts and drawings from research undertaken.</li> </ul>
	Make	<ul style="list-style-type: none"> <li>Cutting and preparing vegetables safely.</li> <li>Using equipment safely, including knives, hot pans and hobs.</li> <li>Knowing how to avoid cross-contamination.</li> <li>Following a step by step method carefully to make a recipe.</li> </ul>	<ul style="list-style-type: none"> <li>Following a recipe, including using the correct quantities of each ingredient.</li> <li>Adapting a recipe based on research.</li> <li>Working to a given timescale.</li> <li>Working safely and hygienically with independence.</li> </ul>
	Evaluate	<ul style="list-style-type: none"> <li>Identifying the nutritional differences between different products and recipes.</li> <li>Identifying and describing healthy benefits of food groups.</li> </ul>	<ul style="list-style-type: none"> <li>Evaluating a recipe, considering: taste, smell, texture and origin of the food group.</li> <li>Taste testing and scoring final products.</li> <li>Suggesting and writing up points of improvements when scoring others' dishes, and when evaluating their own throughout the planning, preparation and cooking process.</li> <li>Evaluating health and safety in production to minimise cross contamination.</li> </ul>
Knowledge	Cooking and nutrition	<ul style="list-style-type: none"> <li>To understand where meat comes from - learning that beef is from cattle and how beef is reared and processed, including key welfare issues.</li> <li>To know that I can adapt a recipe to make it healthier by substituting ingredients.</li> <li>To know that I can use a nutritional calculator to see how healthy a food option is.</li> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>To know that 'flavour' is how a food or drink tastes.</li> <li>To know that many countries have 'national dishes' which are recipes associated with that country.</li> <li>To know that 'processed food' means food that has been put through multiple changes in a factory.</li> <li>To understand that it is important to wash fruit and vegetables before eating to remove any dirt and insecticides.</li> <li>To understand what happens to a certain food before it appears on the supermarket shelf (Farm to Fork).</li> </ul>

## Click here to view the progression

Our National curriculum mapping document shows the National curriculum attainment targets that pupils work towards in our units of work, identifying which unit gives coverage of each target.

The content covered is: mechanisms; structures; textiles; food; electrical systems (KS2); and digital world (KS2). This document shows how the strands, which run throughout our scheme of work, link to the National curriculum attainment targets.

Key Stage 2 - National curriculum Design and technology content	Design and technology strands	*What could be healthier?	*Pop-up books	Stuffed toys	*Doodlers	*Bridges	*Monitoring devices
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	Design	✓	✓	✓	✓	✓	✓
Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design	Design	✓	✓	✓		✓	✓
Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately	Make	✓	✓	✓	✓	✓	
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	Make		✓	✓		✓	
Investigate and analyse a range of existing products							

## Click here to view the National Curriculum Mapping

# DT Overview

	<b>Autumn</b>	<b>Spring</b>	<b>Summer</b>
<b>1</b>	<p><b>Mechanisms: Moving Story Book</b></p> <p>Identifying whether a mechanism is a side-to-side slider or an up-and-down slider, children will determine what movement the mechanism will make. They will clearly label drawings to show which parts of their design will move and how.</p>	<p><b>Textiles: Puppets</b></p> <p>Children will join fabrics together using pins, staples or glue. They will design a puppet, using a template. Children will join two puppet faces together as one and then decorate a puppet to match their design.</p>	<p><b>Food: Fruit and Vegetables</b></p> <p>Describing fruits and vegetables, children will be able to name places that fruits and vegetables grow and explain why they are a fruit or vegetable. Children will describe the basic characteristics of fruit and vegetables and prepare them to make a smoothie.</p>
<b>2</b>	<p><b>Textiles: Pouches</b></p> <p>Children will sew a running stitch with regular-sized stitches and understand that both ends must be knotted. Preparing and cutting fabric, they will make a pouch from a template. Children will join two pieces of fabric together using a running stitch, and will decorate their pouch using the material provided.</p>	<p><b>Food: A Balanced Diet</b></p> <p>Naming the main food groups, children will identify foods that belong to each group. They will describe the taste, texture and smell of given goods. Considering flavour combinations, children will think of four different wrap ideas. They will then construct a wrap that meets the design brief.</p>	<p><b>Structures: Baby Bear's Chair</b></p> <p>Children will identify man-made and natural structures and also stable and unstable shapes. They will contribute to discussions, explaining how their ideas would be suitable. Children will then produce a model that supports a teddy, using the appropriate materials and construction techniques.</p>

# DT Overview

	<b>Autumn</b>	<b>Spring</b>	<b>Summer</b>
<b>3</b>	<p><b>Textiles: Cushions</b></p> <p>Children will use a cross-stitch to join two pieces of fabric together. They will design and cut a template for a cushion, and use cross-stitch and appliqué to decorate a cushion face. Including applique and cross-stitch, children will make a cushion.</p>	<p><b>Structures: Constructing a Castle</b></p> <p>Including most common features, children will draw and label a simple castle. Children will recognise that a castle is made up of 3D shapes and design a castle with key features. They will score or cut along the net of a 2D shape and use glue to assemble geometric shapes.</p>	<p><b>Digital World: Electronic Charm</b></p> <p>Children will give a brief explanation of the digital revolution. They will write a program that initiates a flashing LED panel on the Micro:bit when a button is pressed. Children will identify errors, if testing is unsuccessful, by comparing their code to a correct example. Drawing at least one shape with a text box and bright colours, children will follow basic design requirements using computer-aided design.</p>
<b>4</b>	<p><b>Food: Adapting a Recipe</b></p> <p>Children will follow a recipe, with some support. They will describe some of the features of a biscuit, based on taste, smell, texture and appearance. Children will adapt a recipe by adding extra ingredients to it.</p>	<p><b>Mechanical Systems: Making a Slingshot Car</b></p> <p>Working independently, children produce an accurate, functioning car chassis. They will design a shape that is suitable and attempt to reduce air resistance through the design of the shape. Children will produce panels that will fit the chassis and can be assembled effectively.</p>	<p><b>Electrical Systems: Torches</b></p> <p>Children will identify electrical products and explain why they are useful. Children will make a working switch and identify the features of a torch and how it works. Describing what makes a torch successful, children will create suitable designs that fit the success criteria, and then create a functioning torch.</p>



# DT Overview

	<b>Autumn</b>	<b>Spring</b>	<b>Summer</b>
<b>5</b>	<p><b>Structures: Bridges</b></p> <p>Identifying stronger and weaker shapes, children will recognise that supporting shapes can help increase the strength of a bridge. They will identify beam, arch and truss bridges and describe their differences. Children will cut beans and smooth down any rough edges with sandpaper.</p>	<p><b>Electrical Systems: Doodlers</b></p> <p>Children will identify simple circuit components with a basic explanation of their function. They will remove and replace different parts of a Doodler, and suggest ways to amend the Doodler. They will develop design criteria with consideration for the target user, and then create a functional Doodler that creates scribbles on paper.</p>	<p><b>Food: What could be Healthier?</b></p> <p>Children will understand how beef gets from the farm to our plates. They will contribute ideas as to what a healthy meal means, and notice the nutritional differences between difference products and recipes. Children will follow a recipe to produce a healthy Bolognese sauce and design packaging that promotes the ingredients.</p>
<b>6</b>	<p><b>Mechanical Systems: Automata Toys</b></p> <p>Children will mark, saw and cut out components and supports of their toy. They will develop a design idea and explore different cam profiles. To conceal the inner workings of the automata, children will measure and cut panels that fit. They will decorate and finish the automata, and then evaluate their finished product.</p>	<p><b>Food: Come Dine with Me</b></p> <p>Children will research and find a suitable recipe for their course, recording the relevant ingredients. They will follow a recipe, write up the process and evaluate their meal. Children will also explain where key foods come from before they appear on the supermarket shelf.</p>	<p><b>Digital World: Navigating the World</b></p> <p>Children will incorporate key information from a client's design request in their design brief. They will write a program and identify errors in the code, suggesting ways to fix them. Children will recall and describe the name and use of key tools used in Tinkercad (CAD) software.</p>

# Year 1 Milestones

	Autumn	Spring	Summer
Knowledge and Skills	<p>Mechanisms: Making a moving story book</p> <p>⇒ To make a mechanism.</p> <p>⇒ To design a moving story book.</p> <p>⇒ To construct a moving picture.</p> <p>⇒ To evaluate my finished product.</p>	<p>Textiles: Puppets</p> <p>⇒ To join fabrics together using different methods.</p> <p>⇒ To use a template to create a design.</p> <p>⇒ To join two fabrics together.</p> <p>⇒ To embellish my design.</p>	<p>Food: Fruit and Vegetables</p> <p>⇒ To identify if a food is a fruit or a vegetable.</p> <p>⇒ To identify where plants grow and which parts we eat.</p> <p>⇒ To taste and compare fruit and vegetables.</p> <p>⇒ To make a fruit and vegetable smoothie.</p>
Vocabulary	<p>sliders mechanism adapt design criteria design input model template assemble test</p>	<p>decorate design fabric glue model hand puppet safety pin staple stencil template</p>	<p>fruit vegetable seed leaf root stem smoothie healthy carton design flavour peel slice</p>

# Year 2 Milestones

	<b>Autumn</b>	<b>Spring</b>	<b>Summer</b>
	<p><b>Textiles: Pouches</b></p> <p>⇒ To sew a running stitch.</p> <p>⇒ To join fabrics using a running stitch.</p> <p>⇒ To decorate a pouch using fabric glue or stitching.</p>	<p><b>Food: A Balanced Diet</b></p> <p>⇒ To explain what makes a balanced diet.</p> <p>⇒ To taste test food combinations.</p> <p>⇒ To design a healthy wrap.</p> <p>⇒ To make a healthy wrap.</p>	<p><b>Structures: Baby Bear's Chair</b></p> <p>⇒ To test the stability of different shapes.</p> <p>⇒ To make and test different structures.</p> <p>⇒ To make a structure according to design criteria.</p> <p>⇒ To produce a finished structure.</p> <p>⇒ LO: To evaluate my structure.</p>
	<p>decorate fabric fabric glue knot needle needle threader running stitch sew template thread</p>	<p>balanced diet balance carbohydrate dairy fruit ingredients oils sugar protein vegetable design criteria</p>	<p>design criteria man-made natural properties structure stable shape model test</p>

# Year 3 Milestones

	<b>Autumn</b>	<b>Spring</b>	<b>Summer</b>
	<p>Textiles: Cushions</p> <p>⇒ To sew cross-stitch and applique.</p> <p>⇒ To design a product and its template.</p> <p>⇒ To decorate fabric.</p> <p>⇒ To assembly my cushion.</p>	<p>Structures: Constructing a Castle</p> <p>⇒ To label features of a castle.</p> <p>⇒ To design a castle.</p> <p>⇒ To construct 3D nets.</p> <p>⇒ To construct and evaluate my final product.</p>	<p>Digital World: Electronic Charm</p> <p>⇒ To compare digital products.</p> <p>⇒ To write a program to initiate a flashing LED panel.</p> <p>⇒ .To create and decorate a foam pouch for the eCharm.</p> <p>⇒ To design a display badge.</p>
	<p>appliqué cross-stitch design equipment fabric patch running stitch thread seam texture knot</p>	<p>2D 3D Castle Design Key features Net Scoring Shape Stable Stiff Strong structure</p>	<p>smart wearables product design digital revolution technology analogue digital feature function digital world Micro:bit electronic products program loops initiate simulator control monitor sense template develop fasten test user CAD (computer-aided design) point of sale display badge</p>

# Year 4 Milestones

	<b>Autumn</b>	<b>Spring</b>	<b>Summer</b>
	<p>Food: Adapting a recipe</p> <ul style="list-style-type: none"> <li>⇒ To follow a baking recipe.</li> <li>⇒ To test a prototype.</li> <li>⇒ To design a biscuit.</li> <li>⇒ To make a biscuit that meets a design brief.</li> </ul>	<p>Mechanical Systems: Making a slingshot car</p> <ul style="list-style-type: none"> <li>⇒ To build a car chassis.</li> <li>⇒ To design a shape that reduced air resistance.</li> <li>⇒ To make a model based on a chosen design.</li> <li>⇒ To assemble and test my completed product.</li> </ul>	<p>Electrical Systems: Torches</p> <ul style="list-style-type: none"> <li>⇒ To create a simple circuit.</li> <li>⇒ To analyse and evaluate electrical products.</li> <li>⇒ To design a product.</li> <li>⇒ To make and evaluate a torch.</li> </ul>
	<p>design criteria research texture innovative aesthetic measure cross-contamination diet processed packaging</p>	<p>chassis energy kinetic mechanism air resistance design structure graphics research model template</p>	<p>battery bulb buzzer conductor circuit circuit diagram electricity insulator series circuit switch component design design criteria diagram evaluation LED model shape target audience input recyclable theme aesthetics assemble equipment ingredients packaging properties</p>

# Year 5 Milestones

	<b>Autumn</b>	<b>Spring</b>	<b>Summer</b>
	<p><b>Structure: Bridges</b></p> <p>⇒ To investigate how beam bridges can be made stronger.</p> <p>⇒ To build a spaghetti truss bridge.</p> <p>⇒ To build a wooden truss bridge.</p> <p>⇒ To complete, reinforce and evaluate my truss bridge.</p>	<p><b>Electrical Systems: Doodlers</b></p> <p>⇒ To identify how motors are used in electrical products.</p> <p>⇒ To investigate an existing product.</p> <p>⇒ To develop an improved product.</p> <p>⇒ To develop a DIY kit.</p>	<p><b>Food: What could be healthier?</b></p> <p>⇒ To explain where food comes from.</p> <p>⇒ To identify which ingredients are found in different recipes.</p> <p>⇒ To adapt a traditional recipe.</p> <p>⇒ To make a food product.</p>
	beam bridge arch bridge truss bridge strength technique corrugation lamination stiffness rigid factors stability visual appeal aesthetics joints mark out hardwood softwood wood file/rasp sandpaper/glasspaper bench hook/vice tenon saw/coping saw assemble material properties reinforce wood sourcing evaluate quality of finish accuracy	circuit component configuration current develop DIY investigate motor motorised problem solve product analysis series circuit stable target user	beef reared processed ethical diet ingredients supermarket farm balanced

# Year 6 Milestones

	Autumn	Spring	Summer
	<p><b>Mechanical Systems: Automata Toys</b></p> <ul style="list-style-type: none"> <li>⇒ To prepare wood for assembly.</li> <li>⇒ To assemble the automata frame components.</li> <li>⇒ To experiment with cam profiles and follower movement.</li> <li>⇒ To apply the housing to an automata frame.</li> </ul>	<p><b>Food: Come Dine with Me</b></p> <ul style="list-style-type: none"> <li>⇒ To research and design a three-course meal.</li> <li>⇒ To pare a meal using a recipe.</li> <li>⇒ To explain where our food comes from.</li> <li>⇒ To write up a recipe.</li> </ul>	<p><b>Digital World: Navigating the World</b></p> <ul style="list-style-type: none"> <li>⇒ To write a design brief and criteria.</li> <li>⇒ To write a program to include multiple functions.</li> <li>⇒ To develop a sustainable product concept.</li> <li>⇒ To develop 3D CAD skills to produce a virtual model.</li> <li>⇒ To present a pitch to sell the product.</li> </ul>
	<p>accurate assembly-diagram automata axle bench hook cam clamp component cutting list diagram dowel drill bits exploded-diagram finish follower frame function hand drill jelutong linkage mark out measure mechanism model research right-angle set square tenon saw</p>	<p>equipment flavours ingredients method research recipe bridge method cookbook cross-contamination farm to fork preparation storyboard</p>	<p>smart smartphone equipment navigation cardinal compass application (apps) pedometer GPS tracker design brief design criteria client function program duplicate replica loop variable value if statement boolean corrode moudable lightweight sustainable design environmentally friendly biodegradable recyclable product lifecycle</p>

# Enrichment

	Autumn	Spring	Summer
1			Food: Fruit and Vegetables Picnic on the field with different smoothies
2	Textiles: Pouches Fashion show in school hall		
3			Digital World: Electronic Charm Creating a digital charm for someone
4	Food: Adapting a recipe Making cookies for the Christmas fayre		
5	Structure: Bridges Fieldwork comparing bridges in Birmingham		
6		Food: Come Dine With Me Creating a recipe book	