St. John's CE Primary School
Design and Technology Long Term Plan

Aims:

- To develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world.
- To build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users.
- To critique, evaluate and test their ideas and products and the work of others.
- To understand and apply the principles of nutrition and learn how to cook.

Early Years Framework and National Curriculum	
Nursery	**Personal Social and Emotions Development:** • 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. **Physical Development** • Use large-muscle movements to wave flags and streamers, paint and make marks. • Choose the right resources to carry out their own plan. • Use one-handed tools and equipment, for example, making snips in paper with scissors. **Understanding the World** • Explore how things work. **Expressive Arts and Design** • Make imaginative and complex 'small worlds' with blocks and construction kits, such as a city with different buildings and a park. • Explore different materials freely, in order to develop their ideas about how to use them and what to make. • Develop their own ideas and then decide which materials to use to express them. • Create closed shapes with continuous lines, and begin to use these shapes to represent objects.
Reception	**Physical Development** • Progress towards a more fluent style of moving, with developing control and grace.

St. John's CE Primary School
Design and Technology Long Term Plan

<table>
<tr><td></td><td colspan="6">• Develop their small motor skills so that they can use a range of tools competently, safely and confidently.
• Use their core muscle strength to achieve a good posture when sitting at a table or sitting on the floor.
Expressive Arts and Design
• Explore, use and refine a variety of artistic effects to express their ideas and feelings.
• Return to and build on their previous learning, refining ideas and developing their ability to represent them.
Create collaboratively, sharing ideas, resources and skills.</td></tr>
<tr><td>Early Learning Goal</td><td colspan="6">Physical Development – Fine Motor skills
• Use a range of small tools, including scissors, paintbrushes and cutlery.
Expressive Arts and Design – Creating with Materials.
• Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.
• Share their creations, explaining the process they have used.</td></tr>
<tr><td>Subject Content</td><td>Year 1</td><td>Year 2</td><td>Year 3</td><td>Year 4</td><td>Year 5</td><td>Year 6</td></tr>
<tr><td></td><td colspan="2">Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment].</td><td colspan="4">Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment].</td></tr>
<tr><td>Cooking and Nutrition</td><td colspan="6">Cooking and nutrition. As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life.</td></tr>
</table>

St. John's CE Primary School
Design and Technology Long Term Plan

Design, Make and Evaluate	**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 [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 **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.	**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

St. John's CE Primary School
Design and Technology Long Term Plan

	Cooking and Nutrition • Use the basic principles of a healthy and varied diet to prepare dishes • Understand where food comes from	

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS	**Food – Pumpkin Soup – The Best Pumpkin Soup Story** • Explore fruits and vegetables and the differences between them. • Explore a pumpkin and describe it using the five senses. • Design a fruit and vegetable soup. • Learn how to use a knife safely. • Safely use tools to prepare ingredients. • Design food packaging.		**In my garden – Flower threading** • Use tools and techniques to create a threaded spring flower. • Use scissors correctly. • Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. • Share their creations, explaining the process they have used.		**Structures - Traditional Tales The Gingerbread Man - Make a boat for the Gingerbread Man** • To understand what waterproof means and test whether materials are waterproof. • To test and make predictions for which materials sink or float. • Learn about the different features and structures of boats. • Investigate how the shape and structure of boats affects the way they move. • Design a boat. • Create a boat based on their own design.	
Year 1	**Structures - Constructing a windmill** Pupils who are **secure** will be able to: • Identify some features that would appeal to the client (a mouse) and create a suitable design. • Explain how their design appeals to the mouse. • Make stable structures, which will eventually support the turbine, out of card, tape and glue. • Make functioning turbines and axles that are assembled into the main supporting structure. • Say what is good about their windmill and what they could do better.		**Food – Fruit and Vegetables** Pupils who are **secure** will be able to: • Describe fruits and vegetables and explain why they are a fruit or a vegetable. • Name a range of places that fruits and vegetables grow. • Describe basic characteristics of fruit and vegetables. • Prepare fruits and vegetables to make a smoothie.		**Mechanisms – Wheels and axles** Pupils who are **secure** will be able to: • Explain that wheels move because they are attached to an axle. • Recognise that wheels and axles are used in everyday life, not just in cars. • Identify and explain vehicle design flaws using the correct vocabulary. • Design a vehicle that includes functioning wheels, axles and axle holders. • Make a moving vehicle with working wheels and axles. • Explain what must be changed if there are any operational issues.	

St. John's CE Primary School
Design and Technology Long Term Plan

Year 2	**Food – A Balanced Diet** Pupils who are **secure** will be able to: • Name the main food groups and identify foods that belong to each group. • Describe the taste, texture and smell of a given food. • Think of four different wrap ideas, considering flavour combinations. • Construct a wrap that meets the design brief and their plan.	**Mechanisms – Mechanical animals** Pupils who are **secure** will be able to: • Identify the correct terms for levers, linkages and pivots. • Analyse popular toys with the correct terminology. • Create functional linkages that produce the desired input and output motions. • Design monsters suitable for children, which satisfy most of the design criteria. • Evaluate their two designs against the design criteria, using this information and the feedback of their peers to choose their best design. • Select and assemble materials to create their planned monster features. • Assemble the monster to their linkages without affecting their functionality.	**Textiles - Pouches** Pupils who are **secure** will be able to: • Sew a running stitch with regular-sized stitches and understand that both ends must be knotted. • Prepare and cut fabric to make a pouch from a template. • Use a running stitch to join the two pieces of fabric together. • Decorate their pouch using the materials provided.
Year 3	**Food – Eating seasonally** Pupils who are **secure** will be able to: • Explain that fruits and vegetables grow in different countries based on their climates. • Understand that 'seasonal' fruits and vegetables are those that grow in a given season and taste best then. • Know that eating seasonal fruit and vegetables has a positive effect on the environment. • Design their own tart recipe using seasonal ingredients. • Understand the basic rules of food hygiene and safety.	**Structures – Constructing a castle** Pupils who are **secure** will be able to: • Draw and label a simple castle that includes the most common features. • Recognise that a castle is made up of multiple 3D shapes. • Design a castle with key features which satisfy a given purpose. • Score or cut along lines on the net of a 2D shape. • Use glue to securely assemble geometric shapes. • Utilise skills to build a complex structure from simple geometric shapes.	**Textiles – Egyptian collars** Pupils who are **secure** will be able to: • Demonstrate their ability to use cross-stitch as a decorative feature or to join two pieces of fabric together. • Develop appliqué designs based on design criteria. • Design, cut and shape their template for an usekh/wesekh collar, with increasing accuracy. • Decorate their Egyptian collar using a variety of techniques such as appliqué, cross-stitch, beads, buttons and pinking.

St. John's CE Primary School
Design and Technology Long Term Plan

	• Follow the instructions within a recipe.	• Evaluate their work by answering simple questions.	• Measure and attach a ribbon with a running stitch. • Recognise different types and qualities of fabrics. • Explain the aesthetic and/or functional properties of some of their material choices.
Year 4	**Mechanical Systems – Making a slingshot car** Pupils who are **secure** will be able to: • Work independently to produce an accurate, functioning car chassis. • Design a shape that is suitable for the project. • Attempt to reduce air resistance through the design of the shape. • Produce panels that will fit the chassis and can be assembled effectively using the tabs they have designed. • Construct car bodies effectively. • Conduct a trial accurately and draw conclusions and improvements from the results.	**Food – Adapting a recipe** Pupils who are **secure** will be able to: • Follow a recipe, with some support. • Describe some of the features of a biscuit based on taste, smell, texture and appearance. • Adapt a recipe by adding extra ingredients to it. • Plan a biscuit recipe within a budget.	**Electrical Systems - Torches** Pupils who are **secure** will be able to: • Identify electrical products and explain why they are useful. • Help to make a working switch. • Identify the features of a torch and how it works. • Describe what makes a torch successful. • Create suitable designs that fit the success criteria and their own design criteria. • Create a functioning torch with a switch according to their design criteria.
Year 5	**Structures - Bridges** Pupils who are **secure** will be able to: • Identify stronger and weaker shapes. • Recognise that supporting shapes can help increase the strength of a bridge, allowing it to hold more weight. • Identify beam, arch and truss bridges and describe their differences.	**Textiles – Stuffed toys** Pupils who are **secure** will be able to: • Design a stuffed toy, considering the main component shapes of their toy. • Create an appropriate template for their stuffed toy. • Join two pieces of fabric using a blanket stitch. • Neatly cut out their fabric.	**Food – What could be healthier?** Pupils who are **secure** will be able to: • Understand how beef gets from the farm to our plates. • Present a subject as a poster with clear information in an easy to read format. • Contribute ideas as to what a 'healthy meal' means.

St. John's CE Primary School
Design and Technology Long Term Plan

	• Use triangles to create simple truss bridges that support a load (weight). • Cut beams to the correct size, using a cutting mat. • Smooth down any rough cut edges with sandpaper. • Follow each stage of the truss bridge creation as instructed by their teacher. • Complete a bridge, with varying ranges of accuracy and finish, supported by the teacher. • Identify some areas for improvement, reinforcing their bridges as necessary.	• Use appliqué or decorative stitching to decorate the front of their stuffed toy. • Use blanket stitch to assemble their stuffed toy, repairing when needed. • Identify what worked well and areas for improvement. **Note:** Mechanical systems – Making a pop up book links with science forces objective: recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect.	• Notice the nutritional differences between different products and recipes. • Recognise nutritional differences between two similar recipes and give some justification as to why this is. • Work as a team to amend a bolognese recipe with healthy adaptations. • Follow a recipe to produce a healthy bolognese sauce. • Design packaging that promotes the ingredients of the bolognese.
Year 6	**Food – Come dine with me** Pupils who are **secure** will be able to: • Find a suitable recipe for their course. • Record the relevant ingredients and equipment needed. • Follow a recipe, including using the correct quantities of each ingredient. • Write a recipe, explaining the process taken. • Explain where certain key foods come from before they appear on the supermarket shelf.	**Mechanical systems – Automata toys** Pupils who are **secure** will be able to: • Mark, saw and cut out the components and supports of their toy with a varying degree of accuracy to the intended measurements. • Follow health and safety rules, taking care with the equipment. • Attempt a partial assembly of their toys using an exploded-diagram, following a teacher's demonstration. • Develop a design idea with some descriptive notes. • Explore different cam profiles and choose three for their follower toppers with an explanation of their choices. • Create neat, decorated follower toppers with some accuracy.	**Digital world – Navigating the world** Pupils who are **secure** will be able to: • Incorporate key information from a client's design request such as 'multifunctional' and 'compact' in their design brief. • Write a program that displays an arrow to indicate cardinal compass directions with an 'On start' loading screen. • Identify errors (bugs) in the code and suggest ways to fix (debug) them. • Self and peer evaluate a product concept against a list of design criteria with basic statements. • Identify key industries that use 3D CAD modelling and why. • Recall and describe the name and use of key tools used in Tinkercad (CAD) software.

St. John's CE Primary School
Design and Technology Long Term Plan

		• Measure and cut panels that fit with some inaccuracies to conceal the inner workings of the automata. • Decorate and finish the automata to meet the design criteria and brief. • Evaluate their finished product, making descriptive and reflective points on function and form.	• Combine more than one object to develop a finished 3D CAD model in Tinkercad. • Complete a product pitch plan that includes key information.
		Note: Electrical systems – Steady hand game links with Spring 1 science Electricity buzzers and bulbs.	