St Jude's C of E Junior School KS2
DT Progression Overview

DT: End of Key Stage Two National Curriculum Expectations				
Design	**Make**	**Evaluate**	**Technical Knowledge**	**Cooking and nutrition**
KS2: • 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	**KS2:** • 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	**KS2:** • 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	**KS2:** • 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.	**KS2:** • 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.

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L/S – Year 3 and 4 (Cycle A)	L/S = Year 3 and 4 (Cycle B)
Design A cam is fixed to the axle and the follower sits on the cam. When the axle is rotated, the follower moves up and down, following the shape of the cam. (Knowledge) Explore and use a range of mechanisms (levers, sliders, axles, wheels and cams) in models or products. (Skill) Particular products are designed for specific tasks. E.g. designing a product to help grow plants will require certain materials. (Knowledge) Explain how an existing product benefits the user. (Skill) **Make** Cams are devices that can convert circular motion into up-and-down motion. (Knowledge) Explain how an existing product benefits the user. Explore and use a range of mechanisms (levers, sliders, axles, wheels and cams) in models or products. (Skill) Greenhouse frames need to be strong and lightweight. Wood, metal and PVC plastic are often used. (Knowledge) Construct a mini greenhouse based on their knowledge. (Skill) **Evaluate** Asking questions can help others to evaluate their products. For example, asking someone whether the materials selected helped achieve the purpose of the model. (Knowledge) Suggest improvements to their products and describe how to implement them, beginning to take the views of others into account. (Skill) **Technical Knowledge** Cams are devices that can convert circular motion into up-and-down motion. (Knowledge) Use tools safely for cutting and joining materials and components. Explore and use a range of mechanisms (levers, sliders, axles, wheels and cams) in models or products. (Skill) Diagonal struts create triangular shapes within a frame structure. Adding diagonal struts to a frame structure adds strength and stability. (Knowledge) Create shell or frame structures using diagonal struts to strengthen them. (Skill)	**Design** Annotated sketches and exploded diagrams show specific parts of a design, highlight sections or show functions. They communicate ideas in a visual, detailed way. (Knowledge) Use annotated sketches and exploded diagrams to test and communicate ideas. (Skill) **Make** Block printing and fabric paint are used to create decorative, repeated patterns on fabrics. (Knowledge) Create detailed decorative patterns on fabric using printing techniques. (Skill) A hem runs along the edge of a piece of cloth or clothing. It is made by turning under a raw edge and sewing to give a neat and quality finish. (Knowledge) Hand sew a hem or seam using a running stitch. (Skill) **Evaluate** Evaluation can be done by considering whether the product does what it was designed to do, whether it has an attractive appearance, what changes were made during the making process and why the changes were made. (Knowledge) Identify what has worked well and what aspects of their products could be improved, acting on their own suggestions and those of others when making improvements. (Skill) **Technical Knowledge** Fabrics can be natural or synthetic. Natural fabrics include cotton, silk and wool. Synthetic fabrics include Lycra, polyester and nylon. (Knowledge) Choose from a range of materials, showing an understanding of their different characteristics. (Skill) Characteristics of materials, such as rigidity, strength and smoothness will affect the success of a working model. (Knowledge) Choose from a range of materials, showing an understanding of their different characteristics. (Skill) Simple machines make physical jobs easier by changing the strength or direction of a force.

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Use a hot glue gun and know the advantages that it has over other types of glue. (Knowledge) Use tools safely for cutting and joining materials and components. (Skill) **Cooking and nutrition** A healthy, balanced diet provides the right foods in the correct quantities for the body to grow and stay healthy. Foods can be divided into five main groups: • fruits and vegetables • carbohydrates • proteins • dairy and alternatives • oils and spreads. The Eatwell Guide was launched in 2016 by Public Health England. It shows the balance of foods from the five main food groups that we should eat for a healthy, balanced diet. (Knowledge) Prepare and cook a simple savoury dish. (Skill)	There are six simple machines: pulley, lever, wheel and axle, wedge, inclined plane and screw. Simple machines can be combined to make complex, compound machines. For example, a wheelbarrow combines a lever with a wheel and axle. (Knowledge) Explore and use a range of mechanisms (levers, axles, cams, gears and pulleys) in models or products. (Skill) **Cooking and nutrition** Foods need packaging to keep them fresh, safe to eat and free from damage. Food packaging also provides nutritional information about the food inside. (Knowledge) Design a healthy snack or packed lunch and explain why it is healthy. (Skill)
Key Vocabulary: hot glue gun rigid transparent translucent vent follower mechanism cam greenhouse mineral nutrient vitamin	**Key Vocabulary:** appliqué force micro-organism pulley motif friction net lever wheel & axle synthetic mechanism inclined plane screw wedge

Knowledge in black **Skill in blue**

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U/S – Year 5 and 6 (Cycle A)	U/S = Year 5 and 6 (Cycle B)
Design A pneumatic system uses compressed air to exert a force. (Knowledge) Use mechanical systems in their products, such as pneumatics. (Skill) The Ancient Greeks developed the Classical form of architecture that has been copied for thousands of years. (Knowledge) Explain how the design of a product has been influenced by the culture or society in which it was designed or made. (Skill) **Make** Mechanisms and systems can work together to perform a function. A strong and stable structure is necessary to support mechanisms in a machine. (Knowledge) Build a framework using a range of materials to support mechanisms. Name and select increasingly appropriate tools for a task and use them safely. (Skill) Support, stiffness and stability can be created by using triangular shapes to create strong frameworks, columns to support roofs and overlapping brickwork patterns. (Knowledge) Build a framework using a range of materials to support mechanisms. (Skill) **Evaluate** Evaluations can be made by asking product users a selection of questions to obtain data on how the product has met its design criteria. (Knowledge) Survey users in a range of focus groups and compare results. (Skill) Testing a product against the design criteria will highlight anything that needs improvement or redesign. (Knowledge)	**Design** Bridge structures have changed over time. This is due to factors such as technology, design innovation and new and better access to materials. (Knowledge) Analyse how an invention or product has significantly changed or improved people's lives. (Skill) **Make** Hand stitches include running stitch, blanket stitch and whip stitch. (Knowledge) Select appropriate tools for a task and use them safely and precisely. Use different methods of fastening for function and decoration, including press studs, Velcro and buttons. (Skill) It is important to understand the characteristics of different materials to select the most appropriate material for a purpose. This might include flexibility, waterproofing, texture, colour, cost and availability. (Knowledge) Choose the best materials for a task, showing an understanding of their working characteristics. (Skill) **Evaluate** The iterative process is a series of steps that are repeated, improving the product with each cycle. (Knowledge) Demonstrate modifications made to a product as a result of ongoing evaluation by themselves and to others. (Skill) **Technical Knowledge** Ideas can be communicated in a range of ways, including through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. (Knowledge) Develop design criteria for a functional and appealing product that is fit for purpose, communicating ideas clearly in a range of ways. (Skill)

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Test and evaluate products against a detailed design specification and make adaptations as they develop the product. (Skill) **Technical Knowledge** Pneumatic systems can be used to lift heavy loads, raise and lower platforms or soften a force by acting as a shock absorber. (Knowledge) Explain the functionality and purpose of safety features on a range of products. Use mechanical systems in their products, such as pneumatics. (Skill) **Cooking and nutrition** Seasonality is the time of year when the harvest or flavour of a type of food is at its best. (Knowledge) Describe what seasonality means and explain some of the reasons why it is beneficial. (Skill) A balanced diet gives your body all the nutrients it needs to function correctly. This means eating a wide variety of foods in the correct proportions. (Knowledge) Evaluate meals and consider if they contribute towards a balanced diet. (Skill) Sweet dishes are usually desserts, such as cakes, fruit pies and trifles. Savoury dishes usually have a salty or spicy flavour rather than a sweet one. (Knowledge) Use an increasing range of preparation and cooking techniques to cook a sweet or savoury dish. (Skill)	**Cooking and nutrition** A processed food is changed during preparation and includes processes, such as cooking, freezing, pasteurising, or the addition of ingredients. (Knowledge) Analyse how an invention or product has significantly changed or improved people's lives. (Skill) Eating a balanced diet is a positive lifestyle choice that should be sustained over time. (Knowledge) Plan a healthy daily diet, justifying why each meal contributes towards a balanced diet. (Skill) Ingredients can usually be bought at supermarkets, but specialist shops may stock different items such as specialist vegetables or coffees. (Knowledge) Follow a recipe that requires a variety of techniques and source the necessary ingredients independently. (Skill)
Key Vocabulary: colonnade food hygiene seasonality pneumatics	**Key Vocabulary:** processed unprocessed whole food shelf life yeast engineer concertina whip stitch running stitch blanket stitch

Knowledge in black **Skill in blue**