DESIGN AND TECHNOLOGY CURRICULUM

INTENT

Here at St Wilfrid's, we aim to provide a design and technology curriculum that allows children to learn skills and acquire knowledge which is useful for later life. It is our intention that every child will be given the opportunity to learn and develop key knowledge and skills relating to design and technology as they move through school, including designing, constructing, and using finishing techniques to complete a product. They will look at 5 areas over their primary school years, these include: Textiles, Food and Nutrition, Structures, Mechanisms and Electrical Systems. Each year builds on prior knowledge and skills and electronics are introduced in KS2.

Design Make Evaluate Technical Knowledge

Autumn Term

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5 and 6	Year 6
Autumn 1 or 2		**Autumn 2** Mechanisms Moving Pictures Christmas Cards	**Autumn 2** Textiles Puppets Christmas	**Autumn 2** Structures Photograph Frames Christmas Present	**Autumn 2** Food and Nutrition Christmas Biscuits	**Autumn 2** Structures and Mechanisms Autumn Fair Games	**Autumn 1** Food and Nutrition WW2 Soups
Key knowledge and skills	Build models using construction equipment. Christmas decorations and cards Teach children different techniques for joining materials, such as how to use adhesive tape and different sorts of glue.	**Substantive Knowledge** To know that simple levers and sliding mechanisms can be used to create movement. To know that levers are used in products eg scissors, balances and moving books. To know that construction kits can be used to try out ideas To know how to use tools eg scissors and a hole punch safely **Disciplinary Knowledge** To identify simple levers and sliders in moving books/products and explain how they work. To make drawings of simple products to show how they work To use appropriate vocabulary to describe mechanisms To make simple sliding and lever mechanisms To try out their ideas using construction kits to make simple levers To (with some adult support) assemble strips of card to make simple sliders and lever mechanisms To use tools safely To suggest ideas and explain what they are going to do To model their ideas in card and paper To make their design using appropriate techniques To evaluate their product by discussing how well it works in relation to the purpose	**Substantive Knowledge** To know that there are different types of puppets To know that puppets are made up of different parts To know how to use a template for marking out identical pieces **Disciplinary Knowledge** To make simple drawings and label parts To talk about the different examples of puppets, describing how they have been made To make clear, labelled drawings of the puppets To be able to use basic sewing techniques To discuss the advantages and disadvantages of different joining techniques To use appropriate vocabulary to describe materials, components and processes To talk about what their puppet needs to do to work well To adapt a given template and model their ideas using paper To use a template or paper pattern to cut out two pieces of fabric for their puppet To join their fabric pieces effectively To add features to their puppets using appropriate materials and techniques To talk about their finished puppet in relation to how well it works and how well it fulfils the design criteria	**Substantive Knowledge** To know why it is important for structures to be stable To know the effectiveness of triangulation in structures To know that some structures are made stable by having a wide base To know ways of making stable structures To know ways of strengthening paper **Disciplinary Knowledge** To disassemble and evaluate familiar products To evaluate different joining methods To suggest how they can make their frame into a personalised gift To show evidence of their learning in making a strong and stable photograph frame To show design ideas through drawings with labels To talk about their work and evaluate their frame according to their design criteria	**Substantive Knowledge** To know that biscuits come in many forms eg sweet and savoury, with a variety of shapes, textures and finishes To know that products are designed for different users and this is an important consideration when designing To know and practise the rules of basic food hygiene **Disciplinary Knowledge** To develop skills in evaluating and describing food characteristics To follow a recipe to make biscuits To have ideas for adapting the basic recipe To work safely To evaluate different outcomes and draw conclusions about the impact of added ingredients, different finishes/shape on the end product To generate and develop ideas through brainstorming and discussion To use a specification to inform their design To select food ingredients with appropriate qualities to achieve the desired outcome To plan the main stages of making To make accurately and safely with regard to the quality of the end product To evaluate their work and identify how they have acknowledged constraints in their design	**Substantive Knowledge** To know which fair games have worked well in previous years To know a variety of ways in which structures can be stabilised To know the importance of team work and ensuring everyone has a job to do To know how to use a range of materials and equipment safely and responsibly **Disciplinary Knowledge** To work co-operatively as part of a team. To design a product thinking carefully about function and aesthetics To create a product for a purpose and think about marketing and profit. To work safely using a range of different materials and tools for different purposes. To problem solve and come up with solutions to fix problems. To handle money, prizes and interact with the general public. To evaluate their fair game as a group and think of ways it could be adapted or improved, if they were to do this project again.	**Substantive Knowledge** To know the history of food rationing, why it was necessary and the impact it had on society. To know what is meant by seasonal ingredients. To know and practice the rules of basic food hygiene. **Disciplinary Knowledge** To investigate which foods were rationed and analyse the way they were used to create meals. To compare a wartime soups with a modern day soup. To adapt a recipe to create a seasonal wartime soup, taking into consideration the ingredients that would have been available. To plan the main stages of making and write as a recipe. To prepare a wartime soup, using a range of kitchen equipment safely. To evaluate my soup, taking into consideration what it may have been like in the war and eating the soup.
Key vocabulary		**Designing** idea, discuss, choose, drawing, labelling **Making** hole punch, paper fastener, join, cut carefully, planning **Knowledge and understanding** moving, handle, lever, pivot, pull, push, slider, direction, blade, metal, balance, movement, forward, backwards, order, sequence, length	**Designing** user, list, label, drawing, ideas, mock-up, choose, decide, evaluate, try out ideas, standard unit **Making** plan, template, fabric, cutting out, sewing, needle, running stitch, gluing, adding **Knowledge and understanding** character, puppet, seam, stitch, thread, strong, quality, features, strengthen, reflective symmetry, position, to, towards	**Designing** user, choice, decoration, quality, component parts, purpose **Making** planning, order, rolling, layering, cutting, finish, board **Knowledge and understanding** stable, free-standing, stiffen, frame, sturdy, reinforce, quality, distance, near, close, wide, narrow, deep, shallow, thick, thin	**Designing** investigate, research, evaluate, brainstorm, consumer, quality, specification **Making** combining, creaming, mixing, finishing, sandwiched, hygiene, antibacterial **Knowledge and understanding** names of equipment and ingredients, names of products, quality control, texture, flavour, crisp, crunchy, sticky, soft dough, elastic dough	**Designing** Investigate, research, evaluate, mind-map, quality, aesthetics, sequence, annotated diagram, decision, communicate, team work, co-operation **Making** joining, strengthening, reinforcing, shape, assemble, accurate, mark out, measure, decorate **Knowledge and understanding** triangulation, diagonal, stable, strength, framework, material, tube, rigid, section, tie, strut, beam, horizontal, vertical, target audience, finish, durability, function	**Designing** investigate, research, evaluate, brainstorm, consumer, quality, specification **Making** Cutting, grating, chop, frying, boiling, blending, seasoning, combining, creaming, mixing, finishing, hygiene, antibacterial **Knowledge and understanding** names of equipment and ingredients, names of products, quality control, texture, flavour, rationing, seasonal

Spring Term

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Spring 1 or 2		**Spring 2** Structures Houses and Homes	**Spring 2** Food and Nutrition Wraps and Pancakes	**Spring 1** Mechanisms Moving Monsters Chinse New Year	**Spring 2** Textiles Money Containers Romans	**Spring 2** Mechanisms Moving Toys	Spring 2 Electrical Systems Paper Circuits (Easter Cards)
Key knowledge and skills	Junk modelling Construction with a range of materials Playful making – box model vehicles Joining techniques – split pins	**Substantive Knowledge** To know that we live in many different types of homes To know the names of different buildings and the main features To be able to recognise and name basic mathematical shapes in the context of houses and homes To know basic joining techniques for 3D modelling using glues and masking tape To know how to make structures more stable **Disciplinary Knowledge** To observe carefully and draw simple shapes To make simple hinges To use construction kits to aid modelling To say how they are going to make their model To construct a model by joining and combining 2D and 3D materials in appropriate ways To use basic tools eg scissors and snips safely and effectively To talk about their finished home saying what they have done well, what they are particularly pleased with, and which parts might have been done better	**Substantive Knowledge** To know what makes a balanced diet To know where to find the nutritional information on a drinks container To know that there are five food groups, made up of: fruit and vegetables, starchy carbohydrates, proteins, dairy, oils and spreads To know roughly how much of each food group I should eat each day To know how to experience food through touch and smell To know that the most ideal ingredient combinations for my wrap will contain foods from more than one food group To know how to slice food safely using the bridge or claw grip. **Disciplinary Knowledge** To taste test food combinations To consider and review food combinations To design a healthy wrap, taking into consideration a range of food types. To follow safe procedures for food safety and hygiene. To make a healthy wrap. To review my design against my original plan. To follow instructions on how to make a pancake.	**Substantive Knowledge** To know how air pressure can be used to produce and control movement To know techniques for making simple pneumatic systems To know of techniques for fixing components To know how to evaluate their product as a team and suggest improvements **Disciplinary Knowledge** To compare the effectiveness of different systems To use appropriate vocabulary to describe how things work To construct effective pneumatic systems To investigate ways of using their pneumatic systems with other materials to control movement To work together on an appropriate idea generated through brainstorming and discussion of the constraints To plan the stages of their work and record these at the end of the project in a storyboard To work safely and accurately with a range of simple hand tools	**Substantive Knowledge** To know that products are designed for different purposes and different users To know how to sew using a range of different stitches, how to weave and knit To know that fabrics have different properties To know that some joining techniques are stronger/weaker than others To know that fabric can be joined in temporary and permanent ways To know how to model ideas with paper or inexpensive fabric **Disciplinary Knowledge** To evaluate products and identify criteria that can be used for their own designs To make labelled drawings from different views showing specific features To use simple decorative techniques eg dyeing, embroidery or fabric paints To write a simple specification bearing in mind the intended user To produce drawings with labels to show what they intend to make and the sequence of their work To order the sequence of their work To construct their money container with some accuracy To evaluate their product against their specification	**Substantive Knowledge** To recognise the movement of a mechanism within a toy or model To understand that a cam will change rotary motion into linear motion To understand that different shaped cams produce different movements To know about the relationship between a cam and a follower **Disciplinary Knowledge** To measure and mark out accurately To use tools for cutting safely and effectively To use a drill to make an off-centre hole in a wheel To show that their knowledge of cams and their movement is reflected in their designs To make a prototype to test out their design ideas To produce step-by-step plans for making their design which include the materials and tools needed To draw up an evaluation to be carried out by others	**Substantive Knowledge** To know that electrical circuits are made from a number of components and what components are needed for a complete circuit. To know that electrical circuits can be made in different ways and there are high voltage circuits and low voltage circuits. To know how to make a simple electrical circuit including a bulb. Disciplinary Knowledge To Investigate how to make a paper circuit using new components – different to those that they have used in science. To follow instructions on how to construct a working paper circuit. To create their own paper circuit to create a light up Easter card. To evaluate their design, especially stating how well it was constructed and if the circuit was reliable.
Key vocabulary		**Designing** choose, try out ideas, discuss, drawing, label, list **Making** join, fix, plan, scissors, hole punch, masking tape **Knowledge and understanding** structure, strong, weak, wall, roof, window, glass, brick, transparent, hinge -mathematical understanding eg square, rectangle, triangle cube, cuboid, side, edge, surface, on top of, underneath, smaller than, symmetrical, beside, next to	**Designing** choosing, investigating, tasting, arranging, experimenting, popular, sort, bar chart **Making** Ingredients, washing, cleaning, peeling, cutting, slicing, grating, mixing, frying **Knowledge and understanding** balanced diet, balance, carbohydrate, dairy, fruit, oils, sugar, protein, vegetable, design criteria, savoury, sweet	**Designing** brainstorm, suggestion, evaluate, ideas, constraints, appropriate, graph, data, sort, order, set, label, title, list, probable, possible, impossible **Making** planning, storyboard, components, fixing, tubing, syringe, attaching, finishing **Knowledge and understanding** control, pneumatic system, pressure, inflate, deflate, input, output, pump, hinge, fastest, slowest, often, always, sometimes, never	**Designing** user, purpose, design criteria, model, evaluating, labelled drawings, stiffening, reinforcing, coins, notes **Making** pattern/templates, strength, weaknesses, accurate, finishing **Knowledge and understanding** fabric, fastening, compartment, zip, press stud, clasp, hook and eye, button, buckle, seam, seam allowance, reinforce, gusset, dye, embroidery -properties eg strength, hard-wearing, stretch, fray	**Designing** sequence, annotated diagram, sketch, decision, choice, prototype, model, communicate **Making** shape, assemble, accurate, saw, mark out **Knowledge and understanding** cam, mechanism, movement, linear motion, rotary motion, pivot, off-centre, axle, force, framework, follower, guide, offset, shaft	**Designing** user, specific, plan, labelled drawings, decide, list, design, aesthetics **Making** join, add, electrical flow, switch, bulb, led, button battery, copper tape, tape, glue, accurate **Knowledge and understanding** electricity, circuit, battery, battery holder, bulb, bulb holder, wire, insulation, crocodile connector, aluminium foil, switch, reflector, energy

Summer Term

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Summer 1 or 2		**Summer 2** Food and Nutrition Eat more Fruit and Vegetables Smoothies	**Summer 2** Mechanisms Moving Vehicles Safari	**Summer 2** Food and Nutrition Pasta Salad	**Summer 2** Electrical Systems Torches	**Summer 2** Food and Nutrition Bread	**Summer 2** Textiles Memory Bag
Key knowledge and Skills	Designing and making scarecrows	**Substantive Knowledge** To know basic food handling, hygienic practices and personal hygiene, including how to control risk by following simple instructions To know that fruit and vegetables have nutritional value and are an important part of our diet To know that food processing can affect appearance, texture, odour and taste **Disciplinary Knowledge** To recognise and name a number of different fruit and vegetables To say which may be peeled before being eaten To use sensory vocabulary to describe texture, taste and appearance To classify some fruit/vegetables according to colour, texture and taste, how and where they are grown, what they are used for, how they are eaten. To use a variety of simple tools and equipment To record the results of their experiments To suggest appropriate fruit and vegetables for a product based on their tasting experiences To select and use appropriate equipment and ingredients to achieve the shapes and sensory properties required for their product To talk about their finished product, and record through pictures and words how it looks and tastes and how well it matches their original ideas and chosen target group	**Substantive Knowledge** To know that there are many types of vehicles To know that vehicles have different purposes To know that vehicles are made up of different parts To know that ideas for their own designs can be obtained by looking at familiar products **Disciplinary Knowledge** To make simple drawings and label parts To use wheels and axles, understanding that wheels and axles can be assembled in two different ways: -either the wheel is attached tightly to the axle and the axle is free to rotate, or -the axle is fixed with the wheel free to rotate around it To apply rules which will control risk when using materials, tools and equipment To use hand tools safely and appropriately To choose and use appropriate finishing techniques To identify a purpose for what they intend to design and make To develop their design ideas through discussion, observation and drawing To measure and cut accurately To assemble, join and combine materials in order to make a vehicle To evaluate against their design criteria	**Substantive Knowledge** To know what makes a balanced diet To know where to find the nutritional information on packaging. To know that there are five food groups, made up of: fruit and vegetables, starchy carbohydrates, proteins, dairy, oils and spreads To know roughly how much of each food group I should eat each day To know how to experience food through touch and smell and taste To know that the most ideal ingredient combinations for my pasta salad will contain foods from more than one food group To know how to slice, grate and boil food safely **Disciplinary Knowledge** To taste test food combinations To consider and review food combinations by conducting a simple survey To design a healthy pasta salad, taking into consideration a range of food types. To follow safe procedures for food safety and hygiene. To make a healthy pasta salad, by choosing the type of pasta carefully and combining with foods from different food groups. To review my design and take others opinions on what they like and dislike.	**Substantive Knowledge** To know simple safety when using electricity To know that torches are designed with the particular needs of the user in mind and that these needs can vary widely To know that commercially available torches contain a simple circuit involving metal connectors which do not necessarily have to be wires To know that torches are made of a variety of materials suited to the purpose for which they are employed To know how to make a simple circuit incorporating a battery, light bulb, switch and connecting wires in a safe manner To know how to find a fault in a simple circuit and correct it To know that a variety of metals in different forms will conduct electricity **Disciplinary Knowledge** To identify a number of specific needs of a user in this context and prioritise these in a specification To design and make a product which takes into account some of the needs of the potential user To make a drawing with labels which show the key features of a product that has not yet been made To evaluate their light against the original design criteria and identify some modifications to the light that they have made, including safety of the product	**Substantive Knowledge** To know that there is a wide variety of bread products from a variety of cultural traditions To know that bread products are an important part of a balanced diet and can be eaten in different ways To know about the processes involved in making bread products **Disciplinary Knowledge** To investigate and evaluate bread products according to their characteristics To use an appropriate vocabulary to describe bread products To use ICT for research purposes To follow instructions in order to conduct fair tests To demonstrate accurate, effective and appropriate use of equipment, using safe and hygienic working practices To understand that the properties and quantities of ingredients will affect the final product To follow safe procedures for food safety and hygiene To use investigations to select appropriate ingredients for the final product To write the appropriate specification To plan order of work with list of ingredients and equipment To evaluate the bread product, taking into account their design specification	**Substantive Knowledge** To know that products are designed for a particular purpose and are suitable for different users To know that a designer needs to consider appearance, function, cost and safety when designing products To know that many different materials can be used on a product eg. to stiffen, some to provide a hard-wearing surface and some for appearance To know that some products are made from upcycled materials. To that pattern/templates can be used many times and this ensures consistency in size To know how to pin, sew and stitch materials together to create a product To know that ideas for products can be developed by modelling with paper. **Disciplinary Knowledge** To use a simple sewing machine (if available) To develop alternative ideas and check out that their ideas will work by modelling with paper To demonstrate a clear idea of who will use the bag and to draw up an appropriate design specification To make a working drawing To work independently and systematically using their step-by-step plan eg a flow chart to sequence their work To join the fabric parts and use decorative techniques to achieve a well-constructed and finished memory bag To evaluate their memory bag critically against the design specification
Key vocabulary		**Designing** choosing, investigating, tasting, arranging, experimenting, popular, sort, blockgraph, pictogram **Making** washing, cleaning, peeling, cutting, slicing, grating **Knowledge and understanding** fruit, vegetables, peel, flesh, skin, grater, chopping board, peeler, seeds, pips, stalk, juice, root, leaf, stone, bunch -sensory eg crisp, sharp, juicy, sweet, sour, sticky, squashy, smooth, crunchy, scented, waxy	**Designing** purpose, ideas, discuss, explore, predict, guess, survey, table, venn diagram, most/least common **Making** joining, combining, connecting, testing, punching **Knowledge and understanding** vehicle, wheels, chassis, axles, doweling, hole punch, logo, distance	**Designing** texture, taste, appearance, healthy, preference, criteria, cost, questionnaire, data, frequency diagram **Making** cut, mix, spread, slice, blend, grate, chop, chopping board, knife, grater, boil **Knowledge and understanding** pasta, sauce, ingredients, fridge, food groups, hygiene, high risk, healthy eating, 'balanced plate', thick, thin -sensory eg sweet, sour, bitter, salty, texture	**Designing** user, specific, plan, labelled drawings, decide, list, classify **Making** clip, rectify fault, screw, connect, join **Knowledge and understanding** electricity, circuit, battery, battery holder, bulb, bulb holder, wire, insulation, crocodile connector, aluminium foil, switch, reflector, energy	**Designing** evaluating, investigation, preferences, profile, specification, criteria, fair test, costing **Making** ingredients, quantities, shaping, mixing, topping, kneading, proving, baking, cooking method, grilling, boiling, frying, glazing **Knowledge and understanding** yeast, wheat, grain, flour, dough, crust, rise -names of tools and equipment -sensory characteristics eg texture, doughy, crisp, chewy, yeasty, stretchy, elastic -food safety eg hygiene, bacteria, mould, decay, food poisoning	**Designing** specification, flow chart, mock-up, accurate, users, fabric swatches, working drawing **Making** pattern/template, working properties **Knowledge and understanding** seam, seam allowance, inner, reinforce, right side/wrong side, stitch, stitching, tacking, sewing machine, hem