Sandfield Primary School
Subject area: Design Technology

Intent statement: All children will enjoy the process of designing, making and evaluating. Throughout their time at Sandfield they will develop the practical expertise require to solve a range of problems, apply their knowledge to create visually appealing products that are functional, handle tools safely and effectively, test and critique their own and others work and understand the principles of basic nutrition and how to cook a meal. In turn this will provide pupils with resilience, independence, collaboration and problem solving skills

Knowledge, skills and vocabulary are taught through a two-year cycle phased approach.

	EYFS	Year One	Year Two		Year Three	Year Four	Year Five	Year Six	
Design	*To know and select appropriate resources for desired outcome *Use gestures, talking and arrangements of materials and components to show design * Use contexts set by the teacher and myself *To know and use language of designing and making (join, build, shape, longer, shorter, heavier etc.)	* have own ideas * explain what I want to do *explain what my product is for, and how it will work * To know how pictures and words help plan, begin to use models * design a product for myself following design criteria *To know that researching similar existing products can help own designs	* have own ideas and plan what to do next * explain what I want to do and describe how I may do it * explain purpose of product, how it will work and how it will be suitable for the user * To know how to describe design using pictures, words, models, diagrams, begin to use ICT * To know how to design products for myself and others following design criteria * To know the most suitable tools and materials for a task, and explain choices * use knowledge of existing products to produce ideas		*begin to research others' needs * to know a design needs to meet a range of requirements * to know and describe the purpose of product * follow a given design criteria * to have at least one idea about how to create product * To know a plan needs to show process order, equipment and tools (eg. batik purse sewing documenting planning stages on seesaw) *To know how to create a design using an accurately labelled sketch and words * make design decisions *explain how product will work * To know what a prototype is * To know that computers can aid design	* use research for design ideas * To know a design needs to meet a range of requirements and be fit for purpose *begin to create own design criteria *have at least one idea about how to create product and suggest improvements for design. * produce a plan and explain it to others *say how realistic plan is. * To know how to make an annotated sketch *make and explain design decisions considering availability of resources *explain how product will work * To know what a prototype is *To know that computers can aid design.	*know how to use the internet and questionnaires for research and design ideas *take a user's view into account when designing * begin to consider needs/wants of individuals/groups when designing and ensure product is fit for purpose *create own design criteria * have a range of ideas *To know how to produce a logical, realistic plan and explain it to others. *To know what cross-sectional planning is and use them alongside annotated sketches * make design decisions considering time and resources. *clearly explain how parts of product will work. *model and refine design ideas by making prototypes and using pattern pieces. *know how to use computer-aided designs	* draw on market research to inform design * use research of user's individual needs, wants, requirements for design * identify features of design that will appeal to the intended user * create own design criteria and specification * come up with innovative design ideas *follow and refine a logical plan. *To know how to create and use annotated sketches, cross-sectional planning and exploded diagrams * make design decisions, considering, resources and cost * clearly explain how parts of design will work, and how they are fit for purpose * Know how to independently model and refine design ideas by making prototypes and using pattern pieces * Know how to use computer-aided designs	

Make								
	*to know how to construct with a purpose, using a variety of resources *to know how to use simple tools and techniques *Build / construct with a wide range of objects *Select tools & techniques to shape, assemble and join *Replicate structures with materials / components *To know how how to make an activity safe and hygienic in simple terms *Record experiences by drawing, writing, voice recording	*explain what I'm making and why *consider what I need to do next *to know suitable tools/equipment to cut, shape, join, finish and explain choices *know how to measure, mark out, cut and shape, with support *know how to choose suitable materials and explain choices *try to use finishing techniques to make product look good *know how to work in a safe and hygienic manner	*explain what I am making and why it fits the purpose *make suggestions as to what I need to do next. *know how to join materials/components together in different ways *know how to measure, mark out, cut and shape materials and components, with support. *describe which tools I'm using and why *know suitable materials and explain choices depending on characteristics. *use finishing techniques to make product look good *know how to work safely and hygienically		*to know suitable tools/equipment, explain choices; begin to use them accurately * select appropriate materials, fit for purpose. * To know a plan needs to work through in order *consider how good product will be * Know how to measure, mark out, cut and shape materials/components with some accuracy * Prior knowledge allows to begin to assemble, join and combine materials and components with some accuracy * begin to apply a range of finishing techniques with some accuracy	* to know suitable tools and equipment, explain choices in relation to required techniques and use accurately *to know and select appropriate materials, fit for purpose; explain choices * to know a plan needs to work through in an order * realise if product is going to be good quality * know how to measure, mark out, cut and shape materials/components with some accuracy *prior knowledge allows child to assemble, join and combine materials and components with some accuracy *apply a range of finishing techniques with some accuracy	* know how to use selected tools/equipment with good level of precision * produce suitable lists of tools, equipment/materials needed *to know appropriate materials, fit for purpose; explain choices, considering functionality * to know the importance of creating and following detailed step-by-step plan * explain how product will appeal to an audience * to know how to mainly accurately measure, mark out, cut and shape materials/components *mainly accurately assemble, join and combine materials/components * mainly accurately apply a range of finishing techniques * use techniques that involve a small number of steps * begin to be resourceful with practical problems	* use selected tools and equipment precisely *produce suitable lists of tools, equipment, materials needed, considering constraints * to know appropriate materials, fit for purpose; explain choices, considering functionality and aesthetics * to know the importance of creating, following, and adapting detailed step-by-step plans *explain how product will appeal to audience; make changes to improve quality * know how to accurately measure, mark out, cut and shape materials/components * know how to accurately assemble, join and combine materials/components * accurately apply a range of finishing techniques * use techniques that involve a number of steps * be resourceful with practical problems	

Evaluate	*Adapt work if necessary *Look at similarities and differences between existing objects / materials / tools *Show an interest in technological toys *can offer explanations for why thing might happen, making use of recently introduced vocabulary (Speaking). * can share their creations, explaining the process they have used (Creating with Materials).	*talk about my work, linking it to what I was asked to do * talk about existing products considering: use, materials, how they work, audience, where they might be used *talk about existing products, and say what is and isn't good * talk about things that other people have made *to know and begin to talk about what could make product better	* to know suitable vocab to describe what went well, thinking about design criteria * talk about existing products considering: use, materials, how they work, audience, where they might be used; express personal opinion *evaluate how good existing products are *talk about what I would do differently if I were to do it again and why		* look at design criteria while designing and making *to know design criteria should be used to evaluate finished product * to know what I would change to make design better *begin to evaluate existing products, considering: how well they have been made, materials, whether they work, how they have been made, fit for purpose * begin to understand by whom, when and where products were designed * To know some inventors/designers/ engineers/chefs/ manufacturers of ground-breaking products	*refer to design criteria while designing and making *to know design criteria should be used to evaluate product * begin to explain how I could improve original design *evaluate existing products, considering: how well they've been made, materials, whether they work, how they have been made, fit for purpose * discuss by whom, when and where products were designed * To know whether products can be recycled or reused * know about some inventors/designers/ engineers/chefs/manufac turers of ground-breaking products	*evaluate quality of design while designing and making *evaluate ideas and finished product against specification, considering purpose and appearance. *to know how to test and evaluate final product * evaluate and discuss existing products, considering: how well they've been made, materials, whether they work, how they have been made, fit for purpose * begin to evaluate how much products cost to make and how innovative they are *to know how to research to check how sustainable materials are *to know about some key inventors/designers/ engineers/ chefs/manufacturers of ground-breaking products	*evaluate quality of design while designing and making; is it fit for purpose? * keep checking design is best it can be. *evaluate ideas and finished product against specification, stating if it's fit for purpose *to know how to test and evaluate final product; explain what would improve it and the effect different resources may have had *do thorough evaluations of existing products considering: how well they've been made, materials, whether they work, how they've been made, fit for purpose *evaluate how much products cost to make and how innovative they are * to know how to research to check how sustainable materials are *consider the impact of products beyond their intended purpose *to know and discuss some key inventors/designers/ engineers/ chefs/manufacturers of ground-breaking products	
Technical knowledge – Materials/structures	*explore structures through playing with sand, mud, junk modelling, playdough to begin to learn knowledge of using tools and joining structures	*begin to measure and join materials, with some support *to know vocab to describe differences in materials *suggest ways to make material/product stronger	*know how to measure materials *describe some different characteristics of materials *know how to join materials in different ways *use joining, rolling or folding to make it stronger *use own ideas to try to make product stronger		*know how to use appropriate materials *work accurately to make cuts and holes *know how to join materials *begin to make strong structures	*know how to measure carefully to avoid mistakes *know techniques that attempt to make product strong *continue working on product even if original didn't work *make a strong, stiff structure	*know how to select materials carefully, considering intended use of product and appearance *explain how product meets design criteria *know how to measure accurately enough to ensure precision *ensure product is strong and fit for purpose *begin to reinforce and strengthen a 3D frame	*know how to select materials carefully, considering intended use of the product, the aesthetics and functionality. *explain how product meets design criteria * know techniques to reinforce and strengthen a 3D frame	
Technical knowledge - Mechanisms	*show an interest and begin to talk about how mechanical items work through playing with toy cogs, whisks in the water tray,	*to know what a lever or slide is and begin using them	*use levers or slides *to know and begin to understand how to use wheels and axles		*select appropriate tools / techniques *alter product after checking, to make it better *begin to try new/different ideas *know and use simple lever and linkages to create movement	*know how to use pneumatics to create movement *know how to use levers and linkages to create movement *select most appropriate tools / techniques *explain alterations to product after checking it	*to know how to refine product after testing *grow in confidence about trying new / different ideas *to know what cams, pulleys or gears are to create movement and begin to use them	*to know how to refine product after testing, considering aesthetics, functionality and purpose *incorporate hydraulics and pneumatics *be confident to try new / different ideas * to know what cams, pulleys or gears are to create movement and use them	

					*grow in confidence about trying new / different ideas.			
Technical knowledge - Textiles	*begin to use a range of simple vocabulary to describe textiles * explore ways to join materials together by making use of such as sellotape, masking tape, string, pipe cleaners.	*know how to measure, cut and join textiles to make a product, with some support *choose suitable textiles	*know how to measure textiles *know how to join textiles together to make a product, and explain how I did it *carefully cut textiles to produce accurate pieces *explain choices of textile *know that that a 3D textile structure can be made from two identical fabric shapes.	*know how to join different textiles in different ways *choose textiles considering appearance and functionality *begin to understand that a simple fabric shape can be used to make a 3D textiles project	*think about user when choosing textiles *know how to make product strong * begin to devise a template *explain how to join things in a different way *understand that a simple fabric shape can be used to make a 3D textiles project	*think about user and aesthetics when choosing textiles *use own template * know how to make product strong and look better *know a range of ways to join things *begin to understand that a single 3D textiles project can be made from a combination of fabric shapes.	*think about user's wants/needs and aesthetics when choosing textiles *know how to make product attractive and strong *know what a prototype is and make one *know and use a range of joining techniques *think about how product might be sold *think carefully about what would improve product *understand that a single 3D textiles project can be made from a combination of fabric shapes.	

Technical knowledge – Food and nutrition	*Begin to understand some food preparation tools, techniques and processes *Practise stirring, mixing, pouring, blending *Discuss how to make an activity safe and hygienic *Understand need for variety in food through role play kitchen/shop *Begin to understand that eating well contributes to good health	*describe textures *know to wash hands & clean surfaces *think of interesting ways to decorate food *know where some foods come from, (i.e. plant or animal) *describe differences between some food groups (i.e. sweet, vegetable etc.) *discuss how fruit and vegetables are healthy *know how to cut, peel and grate safely, with support	*know basic hygiene and keep a hygienic kitchen *describe properties of ingredients and importance of varied diet *know where food comes from (animal, underground etc.) *know and describe how food is farmed, home-grown, caught *draw eat well plate; explain there are groups of food *know "five a day" *know how to cut, peel and grate with increasing confidence		*carefully select ingredients *know how to use equipment safely *make product look attractive *know how to grow plants to use in cooking *begin to understand food comes from UK and wider world *know and describe a healthy diet= variety/balance of food/drinks *explain how food and drink are needed for active/healthy bodies. *prepare and cook some dishes safely and hygienically *to know some of the following techniques: peeling, chopping, slicing, grating, mixing, spreading, kneading and baking	*know how to be safe/hygienic *think about presenting product in interesting/ attractive ways *know that ingredients can be fresh, pre-cooked or processed *begin to understand about food being grown, reared or caught in the UK or wider world *know the eat well plate and how a healthy diet=variety / balance of food and drinks *explain importance of food and drink for active, healthy bodies *prepare and cook some dishes safely and hygienically *know some of the following techniques: peeling, chopping, slicing, grating, mixing, spreading, kneading and baking	*know how to be safe / hygienic and follow own guidelines *present product well - interesting, attractive, fit for purpose *begin to know and understand seasonality of foods *understand food can be grown, reared or caught in the UK and the wider world *describe how recipes can be adapted to change appearance, taste, texture, aroma *explain how there are different substances in food / drink needed for health *prepare and cook some savoury dishes safely and hygienically including, where appropriate, use of heat source * know a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.	*understand a recipe can be adapted by adding / substituting ingredients *know and explain seasonality of foods *learn about food processing methods *know by name some types of food that are grown, reared or caught in the UK or wider world *adapt recipes to change appearance, taste, texture or aroma. *describe some of the different substances in food and drink, and how they can affect health *prepare and cook a variety of savoury dishes safely and hygienically including, where appropriate, the use of heat source. *use a range of techniques confidently such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.	
Technical knowledge – Electrical systems	*begin to know that electrical items need a battery or plug through role play and exploration using a range of items such as ipads, torches, alarm clocks and shopping tills, kitchen scales, remote control toys				*know how to use a simple circuit in product (eg. Papier mache volcano with lightbulb inside) *know how to program a computer to control product.	*know how to use a number of components in circuit *know how to program a computer to control product	*know how to incorporate switch into product *confidently use number of components in circuit *begin to be able to program a computer to monitor changes in environment and control product	*know how to use different types of circuit in product * think of ways in which adding a circuit would improve product program a computer to monitor changes in environment and control product	

Vocabulary					
	Picture, drawing, plan, make, stick, join, material, improve, healthy, cook, fruit names, pattern, weak, strong, scissors, sellotape, glue, build,	Planning, investigate, design, evaluate, make, user, purpose, ideas, product, function, design criteria, the names of fruit and vegetables, equipment, utensils, soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard, flesh,skin, seed, pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing ingredients, cut, fold, join, fix, structure, wall, tower, framework, weak, strong, base, top, underneath, side, edge, surface, base, top, straight, curved, metal, wood, plastic, names of 3d shapes, template, tool, fabrics, components (parts), pattern, fabric, decorate, finish, slider, lever, pivot, slot, bridge/guide, card, fasten, join, pull, up, down		evaluating, design brief design criteria, innovative, prototype, user, purpose, function, prototype, design criteria, innovative, appealing, design brief, planning, annotated sketch, sensory evaluations, name of products, names of equipment, utensils, techniques and ingredients texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury, hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested healthy/varied diet, shell structure, three-dimensional (3-D) shape, net, cube, cuboid, prism, vertex, edge, face, length, width, breadth, capacity, marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing, laminating, font, lettering, text, graphics, decision, series circuit, fault, connection, toggle switch, push-to-make switch, push-to-break switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, crocodile clip, control, program, system, input device, output device	function, innovative, design specification, design brief, user, purpose design brief, design specification, prototype, annotated sketch, purpose, user, innovation, research, functional, mock-up, prototype, ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied, gluten, dairy, allergy, intolerance, savoury, source, seasonality utensils, combine, fold, knead, stir, pour, mix, rubbing in, whisk, beat, roll out, shape, sprinkle, crumble, frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent, seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces, name of textiles and fastenings used, pins, needles, thread, pinking shears, fastenings, pulley, drive belt, gear, rotation, spindle, driver, follower, ratio, transmit, axle, motor, circuit, switch, circuit diagram, annotated drawings, exploded diagrams, mechanical system, electrical system, input, process, output, reed switch, toggle switch, push-to-make switch, push-to-break switch, light dependent resistor (LDR), tilt switch, light emitting diode (LED), bulb, bulb holder, battery, battery holder, USB cable, wire, insulator, conductor, crocodile clip control, program, system, input device, output device, series circuit, parallel circuit	