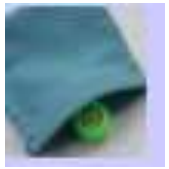
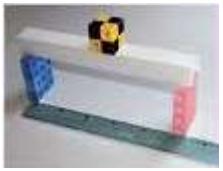
Subject: Design and Technology

		Foundation Stage	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
DESIGNING	Understanding contexts, users and purposes	Can I say who my product will be for?	Can I explain what product I am designing and making? Can I explain how I will make my product? Can I develop a simple design criteria created with a group to help develop my ideas?	Can I explain how my product will work? Can I explain how I will make my product suitable for the intended user? Am I beginning to develop simple design criteria?	Can I describe the purpose of my product? Can I gather information about the wants of an individual or group? Can I develop design criteria?	Can I explain how particular parts of my product will work? Can I gather information about the wants and needs of an individual or group? Can I develop design criteria and use this to inform my ideas?	Can I indicate the design features of my product that will appeal to the user? Can I explain how parts of my design will work? Can I identify the wants, needs and preferences of individuals and groups? Can I carry out research using interviews and questionnaires to inform my design?	Can I identify the wants, needs, preferences and values of individuals and groups? Can I carry out research using surveys, interviews, questionnaires and web-based resources?
	Generating, developing, modelling and communicating ideas	Can I generate ideas for a product by drawing on my experiences? Can I talk about my ideas for my product? Can I model ideas by exploring construction kits?	Can I use knowledge of existing products to generate ideas for a product? Can I communicate ideas for my product by talking and drawing? Can I model ideas by exploring materials, construction kits and making templates?	Can I use knowledge of existing products to inform my ideas for a product? Can I develop and communicate ideas by talking and drawing? Can I model ideas by exploring materials, construction kits, mock-ups and making templates? Can I use IT, where appropriate, to develop and communicate my ideas?	Can I share my ideas in discussions? Can I model my ideas using prototypes? Can I develop and communicate my ideas through annotated sketches and exploded diagrams? Can I generate realistic ideas? Am I beginning to make design decisions that take account of the availability of resources?	Can I share and clarify my ideas through discussion? Can I model my ideas using prototypes and pattern pieces? Can I develop and communicate my ideas through annotated sketches, cross-sectional drawings, and exploded diagrams? Am I beginning to use computer-aided design to develop and communicate my ideas? Can I generate realistic ideas, focusing on the needs of the user? Can I make design decisions that take account of the availability of resources?	Can I model my ideas using pattern pieces? Can I generate innovative ideas? Can I make design decisions, taking account of constraints of resources and cost? Can I use the iterative approach to develop my ideas?	Can I generate innovative ideas, which draw on research? Can I make design decisions, taking account of constraints of resources, cost and time. Can I use the iterative approach effectively to improve my designed product?

	Planning, Practical Skills and Techniques	**Joining techniques** Can I join two pieces of material using one joining technique? 		**Templates and joining techniques** Can I plan by suggesting what to do next? Can I explain why designers use templates? Can I use simple stitch techniques (running stitch)? Can I explain which finishing technique to use depending upon the required effect? Can I Identify where fabrics come from/are made of? Can I use a range of tools and equipment to perform marking out, cutting, joining and finishing? 		**2D shape to 3D product** Can I create a systematic detailed plan as a guide to making? Can I explain how to strengthen, stiffen and reinforce existing fabrics? Can I securely join fabric together using a range of stitches (running stitch, backstitch, backward running stitch, blanket stitch)? Can I explain why designers use patterns? Can I identify and use a seam allowance? Can I use decorative stitches to finish a product? Can I use dipryl or J-cloth fabric for mock-ups? Can I make 2D shaped to create a 3D product? Can I share my knowledge of designers (Luciene Grey – textile designer, carpets, table linen and curtains) and the impact they have made? 	**fabric shapes** Can I make a 3D textile product from a combination of accurately made pieces? Can I use embroidery/applique to embellish a product? Can I select a suitable stitch type (including finishing stitches)? Can I test fabrics in order to select them for use (thermal properties)? Can I analyse existing products and report what joining/fastening methods and multiple pieces have been used? Can I evaluate a range of designers who use fabrics in their work? Can I select a suitable fastener appropriate for the purpose of the product (zip, Velcro, toggle ,ties. press studs. buttons) Can I share my knowledge of designers (Rachel Trevor Morgan – Milliner, Troy Lee designs – biking clothing) and the impact they have made? 	
	Key Vocabulary	Join, sew, stick , decorate		Pattern, mark out, decorate, running stitch, needle, fabric, template, quality, suitable, features, dye, overstitch, design, fray, mock-up, seam		Fastening, compartment, finishing technique, function, prototype, back stitch, felted, woven, knitted, bonded	Specification, tacking, reinforce, applique, annotate, evaluate, innovation, pattern, functionality, seam, seam allowance, right side, wrong side,	

MAKING: ELECTRICAL L SYSTEMS	**Planning, Practical Skills and Techniques**					**Simple switches and circuits** Can I use a range of simple electrical components (bulb, buzzer, and switch)? Can I construct a simple series circuit? Can I evaluate a range of simple secure connections (twisting wires together, wrapping ends, taping over, and connecting block)? Can I identify some simple conductors and insulators? Can I share my knowledge of engineers (Thomas Edison – responsible for developing many devices) and the impact they have made? 		**Complex switches and circuits** Can I produce and follow a clear detailed making plan? Can I incorporate simple self-made switches in a circuit? Can I test components in more complex circuits (series and parallel)? Can I assess and work to correct faults in my electrical system? Can I share my knowledge of inventors and engineers who played a part in creating renewable energy (Victorian inventor William Armstrong – lamp steam turbine and water pressure for a rotating spit, Thomas Edison, Charles Fritz – solar energy, Charles Brush – wind power) and the impact they have made?
	Key Vocabulary					User, fault, insulator, conductor, battery holder, crocodile clip series circuit, connection, push-to-make switch, push-to-break switch, innovative, appealing, control box,		Parallel circuit, input device, output device, system,

MAKING: MECHANICAL SYSTEMS								
	Planning, Practical Skills and Techniques		**Sliders and levers** Can I operate sliders and levers? Can I demonstrate different mechanisms create different types of movement? Can I select a suitable fixing for a specific purpose? Can I explain what movement each mechanism makes? 	**Wheels and axles** Can I identify wheels, axles and axle holders? Can I produce an example of a fixed and free moving axle? Can I use simple methods to fix wheels and axles to a product? Can I select materials and components according to their characteristics? 		**Pneumatics** Can I explain how a pneumatic system uses air to create movement? Can I use prototypes to model and communicate ideas? Can I select and use tools with some accuracy? Can I cut and join materials and components such as tubing, syringes and balloons? Can I investigate and find information on products with pneumatic mechanisms? 	**Cams** Can I recognise that mechanical and electrical systems have an input, process and output? Can I explain what a cam is within a mechanical linkage system and how it can be used to turn rotary motion into linear motion? Can I explain how cams have been used in commercial products? 	
	Key Vocabulary	Car, wheel, pull, push	Mechanism, lever, slider, slot, pivot, guide/bridge, masking tape, fastener, pull, push, down, straight, work, design, evaluate, purpose,	Axle, fixed, free, axel holder, chassis, body, cab, vehicle, design, make, cutting, joining, hacksaw, vice, dowel, body, cab, shaping		Pneumatics, air pressure, syringe, tubing, input, out put	Cam (snail, pear-shaped, oval, drop, eccentric), follower, rotate, linear, mechanism, input, output, slide, shaft,	

MAKING: STRUCTURES	**Planning, Practical Skills and Techniques**	Can I explore different joining materials and say or show how they can be used? Can I join different materials using suitable resources (sticky tape, masking tape, glue, split pins, paper clips)? Can I use one-handed tools and equipment (scissors to create snips in paper)?	**Freestanding Structures:** Can I make freestanding structures stronger, stiffer and more stable? Can I join some simple materials? Can I explain the simple order of making a structure? Can I show some simple finishing techniques to complete my structure? Can I identify some strong/stiff structures (i.e. climbing frame, tower)? Can I recognise what materials are useful for strengthening or stiffening structures and why this is? Can I share some simple facts about an important structural engineer (i.e. Isambard Kingdom Brunel)? 		**Shell Structures** Can I plan the main stages of production? Can I demonstrate sophisticated methods for stiffening/strengthening structures? Can I recognise and make a net? Can I select tools that are appropriate for cutting and scoring materials? Can I explain why engineers use certain structures purposes? Can I share some simple facts about more than one structural engineer (i.e. IKB, Gustavo Eiffel, Peter Rice, Fazlur Khan)? 			**Frame Structures** Can I produce and follow a clear detailed plan? Can I demonstrate how to stiffen, strengthen and reinforce a range of 3-D frameworks? Can I explain which materials are best suited to stiffen and reinforce by selecting them due to their properties? Can I select which shapes are the strongest and will support the most weight in a structure? Can I demonstrate how to use a range of tools i.e. junior hacksaws, G-clamps, bench hooks, hand drills safely? Can I explain why engineers use complex structures purposes? Can I explain how engineers solve complex design problems i.e. building Burji Khalifa in Dubai ?
	Key Vocabulary		Cut, fold, join, fix, weak, strong, structure, wall, tower, weak, strong, base, top, underneath, side, edge, surface, corner, point, straight, curved, metal, wood, plastic		Structure, base, shell, structure, net, marking out, material, joining, stiff, assemble, prism, capacity, scoring, adhesives, reduce, reuse, recycle,			Reinforce, triangulation, stability, temporary, permanent, prototype, innovation, functional, design brief

MAKING: COOKING AND NUTRITION								
	Planning, Practical Skills and Techniques	Can I identify different fruit and vegetables? Can I express which foods I like or dislike?	**Preparing Fruit & Vegetables:** Am I beginning to talk about how to be healthy? Am I beginning to show understanding of a varied diet? Can I show some understanding about where different foods come from? Can I cut, peel, slice, chop, squeeze or grate ingredients safely and hygienically with some support? Am I beginning to measure or weigh using measuring cups or electronic scales? Am I beginning to assemble or cook ingredients? Can I show some understanding of safety when cooking ingredients? Can I explain where a range of fruit and vegetables come from? 	**Preparing Fruit & Vegetables:** Can I talk about how to be healthy? Can I show understanding of a varied diet? Can I talk about where different foods come from? Can I cut, peel, slice, chop, squeeze or grate ingredients safely and hygienically? Can I measure or weigh using measuring cups or electronic scales? Can I assemble or cook ingredients? Can I show understanding of safety when cooking ingredients? 	**Healthy & Varied Diet:** Can I choose the right ingredients for a product? Can I say what to do to be hygienic and safe? Can I use equipment safely? Can I make sure that my product looks attractive? Can I describe how my combined ingredients come together? Can I chop a wider range of foods using different techniques (claw grip, bridge grip) Can I use my senses to evaluate a variety of ingredients? Can I explain whether foods are grown, reared or caught? Can I measure ingredients using a cup, tblsp, and tsp? Can I share my knowledge of a key chef (Dan Barber – farm –to – table movement) and the impact they have made? 	**Healthy & Varied Diet:** Can I prepare ingredients hygienically using appropriate utensils? Can I measure ingredients to the nearest gram accurately? Can I follow a recipe? Can I assemble or cook ingredients (controlling the temperature of the oven or hob, if cooking)? Can I share information about a key chef and their contribution to healthy eating (Jamie Oliver – healthy school)? 	**Celebrating Culture & Seasonality:** Do I understand the importance of correct storage and handling of ingredients? Am I beginning to measure accurately and calculate ratios of ingredients to scale up or down from a recipe? Am I beginning to demonstrate a range of baking and cooking techniques? Am I beginning to create and refine recipes, including ingredients, methods (rubbing), cooking times and temperatures? Can I demonstrate how to cut, knead dough? Can I share information about a range of chefs (Roy Choi and Daniel Patterson – healthy, convenient and affordable food) and their individual styles of cooking? 	**Celebrating Culture & Seasonality:** Do I understand the importance of correct storage and handling of ingredients (using knowledge of microorganisms)? Can I measure accurately and calculate ratios of ingredients to scale up or down from a recipe? Can I demonstrate a range of baking and cooking techniques? Can I create and refine recipes, including ingredients, methods, cooking times and temperatures? Can I share information about an extended range of chefs and their individual styles of cooking?
	Key Vocabulary	Cut, taste, fruit, vegetable	Fruit, vegetables, soft, juicy, crunchy, sticky, smooth, sharp, crisp, sour hard, flesh, skin,	slicing, peeling, cutting, squeezing, healthy diet, choosing, ingredients, planning, tasting, arranging	Texture, taste, appearance, preference, fresh, savoury, frozen, tinned, processed, seasonal, harvested	greasy, moist, fresh, savoury hygienic, edible, grown, reared, caught,	carbohydrate, sugar, fat, protein, vitamins, nutrients, gluten, allergy, intolerance	seasonality, pour, mix, kneed, whisk, beat, combine, fold, rubbing in

EVALUATING	**Own ideas and products**	Can I talk about my design ideas?	Can I talk about my design ideas and what I plan to make? Can I make simple judgements about my product?	Can I talk about my design ideas and what I plan to make? Can I make judgements about my product and ideas? Am I beginning to make judgements against my design criteria? Can I suggest how my product should be improved?	Can I identify the strengths and the areas for improvement in my ideas and product? Have I considered the views of the intended user to improve my product? Do I refer to my design criteria as I design and make? Do I use my design criteria to evaluate my finished product?	Can I identify the strengths and the areas for improvement in my ideas and product in order to develop my design and product? Have I considered the views of the intended user and the views of others to improve my product? Do I refer to and develop where necessary my design criteria as I design ad make? Do I use my design criteria to evaluate my finished product and express the extent to which the criteria has been met?	Can I evaluate the quality of the design and manufacture of my product as I design and make? Can I evaluate my design and product against the original design specification?	Can I evaluate the quality of the design, manufacture and fitness for purpose of my product as I design and make? Can I evaluate my design and product against the design specification and make suggestions for improvements?
	Existing products	Can I say what I like or dislike about existing products?	Can I identify what products intended use is and who would use the product?	Can I identify what the intended use of a product is, who would use the product, how a product works and the materials used?	Can I express how well products have been designed and made? Can I explain whom, when and where products were designed and made?	Can I express how well products have been designed and made, why materials have been chosen, how well products work? Can I explain to what extent products achieve their purpose? Can I say whether products can be recycled or reused? Can I express how innovative products are?	Can I express how well products have been designed and made, why materials have been chosen, how well products work? Can I explain to what extent products achieve their purpose and meet the user's wants and needs?	Can I express how well products have been designed and made, why materials have been chosen, what methods of construction have been used how well products work? Can I investigate how much products cost to make? Can I investigate how sustainable the materials in products are? Can I express the impact products have beyond their intended purpose?