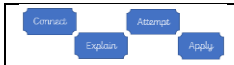
Essential Knowledge for a Designer	Essential Skills for a Designer
• Knowledge and understanding of how to design and make high-quality products • Knowledge of how to critique, evaluate and test their ideas and products • Knowledge of nutrition and cooking	To use their creativity and imagination to make products that solve real problems To take risks, become resourceful and be innovative and enterprising To use critical thinking skills to help evaluate

	EYFS	Key Stage 1	Lower Key Stage 2	Upper Key Stage 2
Generate ideas – designing.	To begin to plan what they would like to make through verbal discussion and pictures.	- Generate ideas based on simple design criteria and their own experiences, explaining what they could make. - Develop, model and communicate their ideas through talking, mock-ups and drawings.	- Generate and clarify ideas through discussion with peers to develop design criteria to inform the design of products that are fit for purpose, aimed at particular individuals or groups. - Use annotated sketches and appropriate information and communication technology, such as web-based recipes, to develop and communicate ideas. - Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, cross-sectional and exploded diagrams.	- Use research using surveys, interviews, questionnaires and web-based resources to develop a design specification for a range of functional products. - Develop a simple design specification to guide the development of their ideas and products, taking account of constraints including time, resources and cost. - Generate and develop innovative ideas and share and clarify these through discussion. - Communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams.
Making	Experiment to create different textures. Construct with a purpose in mind, using a variety of resources. Uses simple tools and techniques competently and appropriately. Select tools and techniques needed to shape, assemble and join materials they are using.	- Plan by suggesting what to do next. - Select and use tools, equipment, skills and techniques to perform practical tasks, explaining their choices. - Select new and reclaimed, materials and components and construction kits to build and create their products. - Use simple finishing techniques suitable for the products they are creating.	- Plan and order the main stages of making. - Select and use appropriate tools to measure, mark out, cut, score, shape and combine with some accuracy related to their products. - Explain their choice of materials according to functional properties and aesthetic qualities. - Select from and use materials and components, including ingredients, construction and electrical components according to their function and properties.	- Formulate a step-by-step plan to guide making, listing tools, equipment, materials and components. - Competently select from and use appropriate tools to accurately measure, mark, cut and assemble materials, and securely connect electrical components to produce reliable, functional products. - Use finishing and decorative techniques suitable for the product they are designing and making.
Evaluating	Verbal discussion on strengths, weaknesses and how they can improve.	- Taste, explore and evaluate a range of products to determine the intended user's preferences for the product. - Evaluate their product by discussing how well it works in relation to the purpose, the user and whether it meets the original design criteria.	- Investigate and evaluate a range of products including the ingredients, materials, components and techniques that are used. - Test and evaluate their own products against design criteria and the intended user and purpose. - Evaluate their ideas and products against their own design criteria and identify the strengths and areas for improvement in their work.	- Investigate and analyse products linked to their final product. - Continually evaluate and modify the working features of the product to match the initial design specification. - Critically evaluate their products against their design specification, intended user and purpose, identifying strengths and areas for development, and carrying out appropriate tests. - Test the system to demonstrate its effectiveness for the intended user and purpose. - Consider the views of others to improve their work.
Vocabulary	Planning, investigating design, evaluate, make, user, purpose, ideas, product	Investigating, planning, design, make, evaluate, user, purpose, ideas, design criteria, product, function	Evaluating, design brief design criteria, innovative, prototype, user, purpose, function, prototype, design criteria, innovative, appealing, design brief, planning, annotated sketch, sensory evaluations	Function, innovative, design specification, design brief, user, purpose design brief, design specification, prototype, annotated sketch, purpose, user, innovation, research, functional, mock-up, prototype

Progression and Skills Map

Cooking and nutrition	Eats a healthy range of food and understands need for variety in food. Discuss where different foods come from. Look closely at similarities, differences, pattern and change in taste and texture. Example of food preparation – To select berries and fruit (that do not require processing) to make a fruit salad	- Understand where a range of fruit and vegetables come from e.g. farmed or grown at home. - Understand and use basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of The eatwell plate. - Know and use technical and sensory vocabulary relevant to the project.	- Know how to use appropriate equipment and utensils to prepare and combine food. - Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught. - Know and use relevant technical and sensory vocabulary appropriately.	- Know how to use utensils and equipment including heat sources to prepare and cook food. - Understand about seasonality in relation to food products and the source of different food products. - Know and use relevant technical and sensory vocabulary.
Vocabulary	Fruit and vegetable names, names of equipment and utensils sensory vocabulary e.g. soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard flesh, skin, seed, pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing, ingredients.	Fruit and vegetable names, names of equipment and utensils sensory vocabulary e.g. soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard flesh, skin, seed, pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing, ingredients	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	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
Structures		- Know how to make freestanding structures stronger, stiffer and more stable. - Know and use technical vocabulary relevant to the project.	- Develop and use knowledge of how to construct strong, stiff shell structures. - Develop and use knowledge of nets of cubes and cuboids and, where appropriate, more complex 3D shapes. - Know and use technical vocabulary relevant to the project	- Understand how to strengthen, stiffen and reinforce 3-D frameworks. - Know and use technical vocabulary relevant to the project.
Vocabulary		cut, fold, join, fix structure, wall, tower, framework, weak, strong, base, top, underneath, side, edge, surface, thinner, thicker, corner, point, straight, curved, metal, wood, plastic circle, triangle, square, rectangle, cuboid, cube, cylinder	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	Frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent
Textiles		- Understand how simple 3-D textile products are made, using a template to create two identical shapes. - Understand how to join fabrics using different techniques e.g. running stitch, glue, over stitch, stapling. - Explore different finishing techniques - Know and use technical vocabulary relevant to the project.	- Know how to strengthen, stiffen and reinforce existing fabrics. - Understand how to securely join two pieces of fabric together. - Understand the need for patterns and seam allowances. - Know and use technical vocabulary relevant to the project.	- Produce a 3-D textile product from a combination of accurately made pattern pieces, fabric shapes and different fabrics. - Understand how fabrics can be strengthened, stiffened and reinforced where appropriate. - Know and use technical vocabulary relevant to the project.
Vocabulary		Joining and finishing techniques, tools, fabrics and components, template, pattern pieces, mark out, join, decorate, finish	Fabric, names of fabrics, fastening, compartment, zip, button, structure, finishing technique, strength, weakness, stiffening, templates, stitch, seam, seam allowance	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

Progression and Skills Map

Mechanisms and mechanical systems		- Explore and use sliders and levers. - Explore and use sliders and levers. - Understand that different mechanisms produce different types of movement. - Know and use technical vocabulary relevant to the project.	- Understand and use lever and linkage mechanisms. - Distinguish between fixed and loose pivots. - Know and use technical vocabulary relevant to the project.	- Understand that mechanical and electrical systems have an input, process and an output. - Understand how gears and pulleys can be used to speed up, slow down or change the direction of movement. Know and use technical vocabulary relevant to the project
Vocabulary		vehicle, wheel, axle, axle holder, chassis, body, cab assembling, cutting, joining, shaping, finishing, fixed, free, moving, mechanism names of tools, equipment and materials used	mechanism, lever, linkage, pivot, slot, bridge, guide system, input, process, output linear, rotary, oscillating, reciprocating	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
Electrical systems			- Understand and use electrical systems in their products linked to science coverage. - Apply their understanding of computing to program and control their products. - Know and use technical vocabulary relevant to the project.	- Understand and use electrical systems in their products linked to science coverage. - Apply their understanding of computing to program, monitor and control their products. - Know and use technical vocabulary relevant to the project
Vocabulary			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	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