

Design and Technology – Substantive Knowledge Progression Document

This document outlines the progression of design and technology objectives, separated into the following areas:

<p align="center">Construction:</p> <ul style="list-style-type: none"> - Design - Make (Cutting) - Make (Mechanisms) - Evaluate - Safety - Designers 	<p align="center">Sewing:</p> <ul style="list-style-type: none"> - Design - Make 	<p align="center">Food Technology:</p> <ul style="list-style-type: none"> - Design - Make - Evaluate 	<p align="center">Key Vocabulary</p>
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	Early Years	Key Stage One	Lower Key Stage Two	Upper Key Stage Two
Units Studied	Scissor Skills Joining Techniques Weaving	Woodwork: Bug Hotels Sewing: Toy Animals and Patchwork Quilts (Running Stitch) Food Technology: Pasta Sauce and Pizzas (Sauteing) Construction & Mechanisms: Pop-Up Cards with Moving Parts	Woodwork: Making an Andersen Shelter Sewing: Roman Purses (Back Stitch) Food Technology: Making Chocolate (Boiling and Melting) Mechanisms: Pulley Systems on a Ship's Crane and Linkages and Levers on a Snapping Crocodile Construction: Making a Conical Volcano	Woodwork: Designing an Earthquake-Proof Structure and Creating a Shelter Sewing: Elizabethan Costume (Blanket Stitch) Food Technology: Making Brandy Snap (Dissolving) Mechanisms: Making a Cam Toy Construction with Electrical Circuits: Eco House Design

	Nursery 1 (Age 2 – 3)	Nursery 2 (Age 3 – 4)	Reception (Age 4 – 5)	Key Stage One	Lower Key Stage Two	Upper Key Stage Two
Construction: Design	<ul style="list-style-type: none"> I can explore different materials and tools. I can manipulate and play with different materials. I am beginning to notice and become interested in the transformative effect of my actions on materials and resources. 	<ul style="list-style-type: none"> I can make choices about which materials to use when creating. 	<ul style="list-style-type: none"> I can select the tools and techniques needed to assemble and join materials that I am using for a specific reason. 	<ul style="list-style-type: none"> I can explore existing products. (CyA: Au2; CyB: Au2) 	<ul style="list-style-type: none"> I can identify the mechanisms in existing products. (CyB: Au2; CyB: Su2) I know that I must design with my intended user in mind. (CyA: Sp2) I can produce annotated sketches and cross-sectional diagrams to plan my design. (CyA: Au2; CyA: Sp2; ByB: Su2) I know that the triangular shape is used within structures for strength. (CyA: Sp2) 	<ul style="list-style-type: none"> I know that I must take into account the view of my intended user when designing my prototype. (CyB: Su2) I can communicate my ideas by creating annotated sketches and exploded diagrams. (CyA: Sp2; CyB: Au2; CyB: Su2) I know that triangles are used in structures for strength. (CyA: Au2; CyB: Su2)
Construction: Make (Cutting)	<ul style="list-style-type: none"> I can develop manipulation and control. I can build independently with a range of appropriate resources. 	<ul style="list-style-type: none"> I can make snips in paper using scissors. 	<ul style="list-style-type: none"> I can confidently use scissors and small tools. I can use scissors independently. I can make snips in paper either using one hand or two. I am developing my skill when using tools, including scissors. I can use scissors to cut in a straight line. I can use scissors to cut curved lines. I can use scissors to cut shapes. 	<ul style="list-style-type: none"> I can measure and mark out to the nearest centimetre. (CyA: Au2; CyB: Au2) I can use a saw and a bench hook (with the support of an adult) to cut wood safely. (CyA: Sp2) I can safely demonstrate a range of cutting and shaping techniques such as tearing, cutting, folding and curling. (CyA: Au2; CyB: Au2) 	<ul style="list-style-type: none"> I can measure and mark out to the nearest half centimetre. (CyA: Sp2) I can create a conical net. (CyA: Au2) I can cut along a line accurately and neatly. (CyA: Au2) I can use a saw and a bench hook to cut wood safely. (CyA: Sp2) I can use a slit and tab to join without glue. (CyA: Au2) 	<ul style="list-style-type: none"> I can measure and mark out to the nearest millimetre. (CyA: Au2; CyA: Sp2; CyB: Su2) I can use a protractor to measure and mark out 45, 60 and 90 degree angles. (CyA: Au2; CyA: Sp2; CyB: Su2) I can create nets. (CyA: Sp2) I can use a saw and mitre block to safely cut wood to size. (CyA: Au2; CyB: Su2)
Construction: Make (Mechanisms)	<ul style="list-style-type: none"> I can make simple models that express my ideas. 	<ul style="list-style-type: none"> I can join different materials together. 	<ul style="list-style-type: none"> I can use simple joins when using materials to create 3D work (for example: sellotape, masking tape and glue). 	<ul style="list-style-type: none"> I can make a simple mechanism such as a slider. (CyB: Au2) 	<ul style="list-style-type: none"> I can use mechanical systems such as levers and linkages to make a product with moving parts. (CyB: Su2) I can use a pulley system to create a moving part. (CyB: Au2) I can apply my knowledge of electrical circuits to add a light to my design. (CyA: Sp2) I know how to use pulleys and cams to create a moving part. (CyB: Au2) I know the difference between levers and linkages. (CyB: Su2) 	<ul style="list-style-type: none"> I can use a mechanical system to make a product that moves. (CyB: Au2) I know the difference between mechanical and electrical systems. (CyB: Au2) I can use electrical circuits to add lightbulbs and a buzzer to my building. (CyA: Sp2) I know the difference between pulleys and cams. (CyB: Au2) I know how to use electrical systems to add lighting and a doorbell to my building. (CyA: Sp2)

Construction: Evaluate					<ul style="list-style-type: none"> I can evaluate the success of my model and explain how it could be improved. (CyA: Au2) 	<ul style="list-style-type: none"> I can consider the views of others to improve my work. (CyA: Sp2; CyB: Au2) I can test my product to check that it would withstand an earthquake. I can use this test to influence future designs. (CyA: Au2)
Construction: Safety				<ul style="list-style-type: none"> I know how to keep myself and others safe when using equipment and tools. (CyA: Au2; CyB: Au2; CyA: Sp2) 	<ul style="list-style-type: none"> I know how to use a safety scalpel to cut a slit. (CyA: Au2) 	
Construction: Designers					<ul style="list-style-type: none"> I know that Archimedes influenced the development of early pulley systems. (CyB: Au2) I know how the inventions of Thomas Edison have helped to shape the world. (CyA: Sp2) 	<ul style="list-style-type: none"> I know that Robert Stephenson was a key individual who designed bridges. (CyA: Au2)
Sewing: Design	<ul style="list-style-type: none"> I can explore different materials and tools. I can manipulate and play with different materials. I am beginning to notice and become interested in the transformative effect of my actions on materials and resources. 	<ul style="list-style-type: none"> I can make choices about which materials to use when creating. I can make choices about which materials to use when creating. 	<ul style="list-style-type: none"> I can choose materials for effect, for example to make a puppet. I understand the purpose of different textiles or materials. 	<ul style="list-style-type: none"> I can communicate my design through drawing my ideas. (CyA: Sp2; CyB: Sp1) 	<ul style="list-style-type: none"> I can design and create a sewing pattern template. (CyB: Sp1) 	<ul style="list-style-type: none"> I can design and create a sewing pattern template. (CyB: Sp1)

Sewing: Make		<ul style="list-style-type: none"> I can join different materials together. 	<ul style="list-style-type: none"> I can weave using natural and man-made materials. I can sew using a pre-running stitch using natural resources. 	<ul style="list-style-type: none"> I can cut material to within a centimetre of the edge of a template. (CyA:Sp2; CyB:Sp1) I can join textiles using running stitch. (CyA:Sp2; CyB:Sp1) I know how to keep myself and others safe when using equipment and tools. (CyA:Sp2; CyB:Sp1) 	<ul style="list-style-type: none"> I can cut material to within half a centimetre of the edge of a template. (CyB:Sp1) I can use the backstitch to join my fabric. (CyB:Sp1) I can thread a needle with a large eye and a needle threader. (CyB:Sp1) I know how to use right sides together to hide stitching to create a smooth finish. (CyB:Sp1) 	<ul style="list-style-type: none"> I can cut materials with precision. (CyB:Sp1) I can consider to how create a professional looking finish. (CyB:Sp1) I can create my own Elizabethan costume accessory, using a blanket stitch to create a finished edge. (CyB:Sp1) I know how to tie a knot at the end of my thread. (CyB:Sp1) I know how to use layers to stiffen fabric. (CyB:Sp1)
Food Technology: Design				<ul style="list-style-type: none"> I can taste ingredients to identify likes and dislikes and use this to influence my own recipe. (CyA:Su1; CyB:Su2) 	<ul style="list-style-type: none"> I can create a prototype with an intended consumer in mind. (CyA:Su1) 	<ul style="list-style-type: none"> I can plan ahead before following a recipe, to gather together everything that I need. (CyA:Su1)
Food Technology: Make				<ul style="list-style-type: none"> I can follow instructions, with the help of an adult, to create a simple recipe. (CyASu1; CyB:Su2) I can measure or weigh using measuring cups or electronic scales. (CyASu1) I can cut, peel or grate ingredients safely and hygienically. (CyASu1; CyB:Su2) I can use a saucepan safely to sauté ingredients. (CyASu1; CyB:Su2) I know how to keep myself and others safe when using equipment and tools. (CyA:Su1; CyB:Su2) 	<ul style="list-style-type: none"> I can follow instructions to create a recipe. (CyA:Su1) <p>I can use analogue scales to weigh and measure accurately to the nearest 25 or 250 grams. (CyA:Su1)</p> <p>I can use a saucepan to simmer water safely when melting chocolate. (CyA:Su1)</p> <ul style="list-style-type: none"> I know how to heat ingredients safely. (CyA:Su1) 	<ul style="list-style-type: none"> I can follow instructions to create a recipe. (CyA:Su1) I can use analogue scales to weigh and measure accurately to the nearest gram, reading scales that increase in various intervals. (CyA:Su1) I can use a saucepan safely when dissolving butter and sugar, ensuring that the mixture doesn't crystallise. (CyA:Su1) I know how to heat ingredients safely. (CyA:Su1)
Food Technology: Evaluate				<ul style="list-style-type: none"> I can express my likes and dislikes about my cooking. (CyASu1; CyB:Su2) 	<ul style="list-style-type: none"> I can gather feedback about my product to evaluate it. (CyA:Su1) 	<ul style="list-style-type: none"> I can gather feedback about my product to evaluate it. (CyA:Su1)

Key Vocabulary	build make cut stack put	scissors careful glue	attach stick join 3D stronger weave	tools saw safely tearing curling slider moving part fabric running stitch needle thread grate scales recipe sauté	scalpel cross-sectional diagrams conical net slit and tab pulley mechanism right sides together backstitch eye electrical circuit bench hook intended user levers linkages consumer grams simmer	structure mitre block withstand gears pulleys cams motor electrical system buzzer net exploded diagram blanket stitch stiffen professional sewing pattern crystalise dissolve intended consumer intervals
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