# Franche Community Primary School: Curriculum Progression in DT

## Textiles Engineers

| EYFS | Year 1 | Year 2 | Year 3 | Year 6 |
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| To know how to:<br><br>• join two pieces of material using one joining technique (i.e. gluing) | To know:<br>• what a template is<br>• a simple 3D textile product is made<br>• range of finishing techniques available<br>• the names of simple fabric products (cushion, jumper, blanket)<br>• why simple fabrics are chosen based on their properties (wool is used for a blanket because it is soft and warm<br><br>To know how to:<br>• join two pieces of fabrics using different joining techniques (gluing, stapling, stitching)<br>• follow relevant health and safety protocols<br><br>To begin to know:<br>• how to use simple stitch techniques | To know:<br>• why designers use templates<br>• when to use certain fabrics based on their suitability to the product<br>• the names of at least one designer of fabric products (e.g. William Morris - floral interior design patterns<br>• where simple fabrics come from/are made of (e.g. wool from sheep)<br>• what a design evaluation is<br><br>To know how to:<br>• use simple stitch techniques<br>• follow relevant health and safety protocols | To know:<br>• what a design brief is<br>• what a prototype is<br>• why designers use patterns<br>• what seam allowances are<br>• why designers evaluate their designs<br>• how different fabrics are constructed (i.e. woven materials, spun materials, knitted materials<br>• how/when to use decorative stitches to finish a product<br>• what constitutes a renewable/sustainable material/fabric<br>• some simple facts about a designer<br><br>To know how to:<br>• strengthen, stiffen and reinforce existing fabrics<br>• securely join two pieces of fabric together using a range of stitches | To know:<br>• that a 3D textile product can be made from a combination of accurately made pieces<br>• when to combine multiple different fabrics to create a 3D product<br>• how embroidery can embellish a product<br>• when to use particular stitch types (including finishing stitches)<br>• what a questionnaire is and how it can help with product design (children could create a simple questionnaire which could then be used to form a design brief?)<br><br>To know how to:<br>• follow relevant health and safety protocols<br>• test fabrics in order to select them for use<br>• analyse existing products and report what joining/fastening methods and multiple pieces have been used<br>• some key dates in the development of fabric and textiles |

## Structural Engineers

| EYFS | Year 2 | Year 3 | Year 5 |
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| To know how to:<br><br>• make a freestanding structure from simple blocks/boxes<br>• make a structure taller<br>• make a structure more stable<br>• one example of a strong structure<br>• one example of a strong/weak material | To know how to:<br>• make freestanding structures stronger, stiffer and more stable<br>• join some simple materials<br><br>To know some:<br>• simple finishing techniques to complete their structure<br>• strong/stiff structures (i.e. climbing frame, tower)<br>• simple facts about an important structural engineer (e.g. Brunel)<br><br>To know the name of:<br>• simple 2D and 3D shapes<br>• materials that are useful for strengthening or stiffening structures and why this is. | To know how to:<br>• test a material's strength<br>• use CAD to develop a product<br><br>To know:<br>• more sophisticated methods for stiffening/strengthening structures<br>• what a net is<br>• the names of more complex 3D shapes<br>• which tools are appropriate for cutting and scoring materials<br>• some simple facts about an important structural engineer<br>• why some engineers use certain structures for certain purposes | To know how to:<br>• stiffen, strengthen and reinforce a range of 3-D frameworks<br>• use a range of tools i.e. junior hacksaws, G-clamps, bench hooks, hand drills safely<br>•<br>To know:<br>• which materials are best suited to stiffen and reinforce by selecting them due to their properties<br>• which shapes are the strongest and will support the most weight in a structure<br>• why structures are used for different purposes<br>• about more than one important structural engineer in detail |

## Mechanical Engineers

| EYFS | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 and 6 |
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| **Wheels and axles**<br>To know:<br>• objects on wheels can be moved by pulling or pushing<br>• how a wheel fits on to an axle<br>• a product that has wheels | **Sliders and levers**<br>To know:<br>• that different mechanisms create different types of movement<br>• the name of simple tools and their purpose<br>• some simple fixing techniques and when to use them (i.e. masking tape to secure a lollipop stick slider)<br>• what a pivot is<br>• where sliders and levers are used in real life context<br>• how to operate sliders and levers | **Wheels and axles**<br>To know:<br>• what wheels, axles and axle holders are<br>• the difference between fixed and free moving axles<br>• simple methods to fix wheels and axles to a product<br>• names of some simple tools and their purpose<br>• some simple commercial products that use wheels and axles to move<br>• the difference between pulling and pushing forces<br>• which materials are best used for particular components (i.e. rubber covered wheels might provide more grip than plastic wheels) | **Pneumatics**<br>To know:<br>• how pneumatics can be applied to real life contexts – tools etc.<br>• the scientific concept of pneumatic and how air can be used to create movement<br>• which materials are best used for particular components (i.e plastic tubing) | **Levers and Linkages**<br>To know:<br>• where levers and linkages are used in the real context<br>• levers and linkages create movement and how direction can be changed<br>• fixing techniques including fixed and loose pivots<br>• how to operate levers | **Pulleys and gears**<br>To know:<br>• what pulleys and gears are<br>• the difference between a pulley and a gear<br>• how pulleys and gears create movement<br>• that systems have an input, output and process |

**Electrical Engineers**

| Year 4 | Year 5 and Year 6 |
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| To know:<br>• what electricity is and what it is used for and what an electrical circuit is<br>• a range of simple electrical components and their functions (bulb/buzzer/switch)<br>• some components have positive and negative terminals<br>• simple commercial products that use electrical systems<br>• some simple conductors and insulators<br>• how electricity is measured (volts and amps)<br>To know how to:<br>• control and program a product using computing (i.e. beebots)<br>• construct a simple series circuit<br>• make a range of simple secure connections (twisting wires together, wrapping ends, taping over, connecting block | To know:<br>• technical vocabulary relevant to the project<br>• how simple switches can be made<br>• why materials make good conductors and insulators<br>how electrical systems are controlled (i.e. flow charts)<br><br>To know how to:<br>• incorporate simple self-made switches in a circuit<br>• test components in more complex circuits (series and parallel)<br>• assess faults in their own electrical systems<br>• test components in a simple series circuit |

## Designers, Makers, Evaluators

| | EYFS | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
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| **Design** | Begin to use the language of designing (i.e. design, plan, draw)<br><br>Learn how to plan and adapt initial ideas to make them better<br><br>Verbally explain some features of their design | Draw on their own experience to help generate ideas<br><br>Suggest ideas and explain what they are going to do<br><br>Identify a target group for what they intend to design and make<br><br>Model their ideas in card and paper<br><br>Develop their design ideas applying findings from their earlier research | Generate ideas by drawing on their own and other people's experiences<br><br>Develop their design ideas through discussion, observation, drawing and modelling<br><br>Identify a purpose for what they intend to design and make<br><br>Identify simple design criteria<br>Make simple drawings and label parts | Generate ideas for an item, considering its purpose and the user/s<br><br>Identify a purpose and establish criteria for a successful product.<br><br>Plan the order of their work before starting<br><br>Explore, develop and communicate design proposals by modelling ideas<br><br>Make drawings with labels when designing | Generate ideas, considering the purposes for which they are designing<br><br>Make labelled drawings from different views showing specific features<br><br>Develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making, if the first attempts fail | Generate ideas through brainstorming and identify a purpose for their product<br><br>Draw up a specification for their design<br><br>Develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making if the first attempts fail<br><br>Use results of investigations, information sources, including ICT when developing design ideas | Communicate their ideas through detailed labelled drawings<br><br>Develop a design specification<br><br>Explore, develop and communicate aspects of their design proposals by modelling their ideas in a variety of ways<br><br>Plan the order of their work, choosing appropriate materials, tools and techniques |

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| | EYFS | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
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| **Make** | Construct their product with a simple purpose in mind<br><br>Use simple tools to shape, assemble and join materials together | Make their design using appropriate techniques<br><br>With help measure, mark out, cut and shape a range of materials<br><br>Use tools *eg scissors and a hole punch* safely<br><br>Assemble, join and combine materials and components together using a variety of temporary methods e.g. glues or masking tape | Begin to select tools and materials; use vocabulary to name and describe them<br><br>Measure, cut and score with some accuracy<br><br>Use hand tools safely and appropriately<br><br>Assemble, join and combine materials in order to make a product | Select tools and techniques for making their product<br><br>Think about their ideas as they make progress and be willing to change things if this helps them improve their work<br><br>Measure, mark out, cut, score and assemble components with more accuracy<br><br>Work safely and accurately with a range of simple tools | Select appropriate tools and techniques for making their product<br><br>Measure, mark out, cut and shape a range of materials, using appropriate tools, equipment and techniques | Select appropriate materials, tools and techniques<br><br>Measure and mark out accurately<br><br>Use skills in using different tools and equipment safely and accurately<br><br>Cut and join with accuracy to ensure a good-quality finish to the product | Select appropriate tools, materials, components and techniques<br><br>Assemble components make working models<br><br>Make modifications as they go along<br><br>Use tools safely and accurately<br><br>Construct products using permanent joining techniques<br><br>Pin, sew and stitch materials together create a product |

| | EYFS | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
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| **Evaluate** | Verbally explain what they like/dislike about their product<br><br>Suggest one thing that they might change when creating a similar product | Evaluate their product by asking questions about what they have made and how they have gone about it<br><br>Evaluate their product by discussing how well it works in relation to the purpose<br><br>Evaluate their products as they are developed, identifying strengths and possible changes they might make | Evaluate against their design criteria<br><br>Evaluate their products as they are developed, identifying strengths and possible changes they might make<br><br>Talk about their ideas, saying what they like and dislike about them | Evaluate their product against original design criteria *e.g. how well it meets its intended purpose*<br><br>Disassemble and evaluate familiar products | Evaluate their work both during and at the end of the assignment<br><br>Evaluate their products carrying out appropriate tests | Evaluate a product against the original design specification<br><br>Evaluate it personally and seek evaluation from others | Evaluate their products, identifying strengths and areas for development, and carrying out appropriate tests<br><br>Record their evaluations using drawings with labels<br><br>Evaluate against their original criteria and suggest ways that their product could be improved |