

## LMA: Key Knowledge Progression Document: Design & Technology

At Key Stage 1 and 2, the Key Knowledge Progression Document takes full account of the National Curriculum's requirements and groups these into the following strands:

- Design
- Make
- Evaluate
- Using Technical Knowledge
- Cooking and Nutrition

These strands have been selected to reflect the key knowledge and skills in the National Curriculum subject content.

### Rationale - decisions made include the following:

Children should work in a range of relevant contexts [for example in KS1, the home and school, gardens and playground, the local community, industry and the wider environment and for example in KS2, the home, school, leisure, culture, enterprise, industry and the wider environment].

✓ **Skills** are dependent on specific procedural knowledge. A skill is the capacity to perform and in order to perform a deep body of knowledge needs to be acquired and retained

✓ These **knowledge statements** should be what pupils retain for ever. In other words, this knowledge is within their long-term memory and will be retained.

✓ When considering pupils' improvement in subject specific vocabulary knowledge, pupils could be provided with a **knowledge organiser** which contains the relevant words used for DT for their age group. This should be shared with parents.

### National Curriculum Subject Content

| KS1 Strands                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                            |                                                                                                                      |                                                                                                                                                                                            |                                                                                                                   | KS2 Strands                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                |
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| Design                                                                                                                                                                                                                                                                                 | Make                                                                                                                                                                                                                                                                                                       | Evaluate                                                                                                             | Technical Knowledge                                                                                                                                                                        | Cooking & nutrition                                                                                               | Design                                                                                                                                                                                                                                                                                                                                                                           | Make                                                                                                                                                                                                                                                                                                                                                      | Evaluate                                                                                                                                                                                                                                                                                        | Technical Knowledge                                                                                                                                                                                                                                                                                                                                                                                                                                                | Cooking & nutrition                                                                                                                                                                                                                                                                            |
| Design purposeful, functional, appealing products for themselves and other users based on design criteria.<br><br>Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology. | Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing].<br><br>Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. | Explore and evaluate a range of existing products.<br><br>Evaluate their ideas and products against design criteria. | Build structures, exploring how they can be made stronger, stiffer and more stable.<br><br>Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products. | Use the basic principles of a healthy and varied diet to prepare dishes.<br><br>Understand where food comes from. | Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups.<br><br>Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design | Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] accurately<br><br>Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities. | Investigate and analyse a range of existing products.<br><br>Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.<br><br>Understand how key events and individuals in design and technology have helped shape the world. | Apply their understanding of how to strengthen, stiffen and reinforce more complex structures<br><br>Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]<br><br>Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]<br><br>Apply their understanding of computing to program, monitor and control their products | Understand and apply the principles of a healthy and varied diet.<br><br>Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques.<br><br>Understand seasonality and know where and how a variety of ingredients are grown, reared, caught and processed |

| KS1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Strand        | Y3                                                                                                                                                                                                                                                                                                                                                | Y4                                                                                                                                                                                                                                                                                                                                      | Y5                                                                                                                                                                                                                                                                                                                                                                                                        | Y6                                                                                                                                                                                                                                                                                                                                              | Y7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
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| <p>DT1.1 know how to use own ideas to design a functional product</p> <p>DT2.1 know the purpose and audience of their product through design criteria set by the teacher</p> <p>DT2.2 know how to use IT to communicate and research ideas where appropriate (e.g. taking pictures and annotating them)</p> <p>DTR.4 know how to use drawing to create a simple plan</p> <p>DT1.4 know how to draw a simple plan with support from templates before making</p> <p>DT2.4 know how to draw a simple design and label the parts of their product</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Design</b> | <p>DT3.1 know how to prove that a design is fit for purpose and meets the user's needs in line with the design criteria</p> <p>DT3.2 know how to design a product and make sure that it looks appealing</p> <p>DT3.3 know how to draw annotated designs with labels that detail their material choices and suitability of the given materials</p> | <p>DT4.1 know how to use ideas from other people when designing (e.g. creating a mood board of existing products)</p> <p>DT4.2 know how to produce a design criteria to inform the designing and making process</p> <p>DT4.3 know how to communicate ideas through annotated sketches that show different viewpoints of the product</p> | <p>DT5.1 know how to design with a range of initial ideas using computer- aided design (CAD) where appropriate (e.g. CAD for packaging)</p> <p>DT5.2 know how to explain how a product will appeal to a specific audience and how it meets the purpose through creating their own design criteria</p> <p>DT5.3 know how to create annotated 3D drawings of their design on isometric or squared paper</p> | <p>DT6.1 know how to justify design choices and planning in terms of audience and purpose</p> <p>DT6.2 know how to show that culture and society is considered in plans and design criteria</p> <p>DT6.3 know how to draw detailed 3D designs using exploded diagrams or cross sectional drawing where appropriate to display finer details</p> | <p>DT7.1 know how to create their designs against a specific design specification for a specific audience</p> <p>DT7.2 know how to show that their product can be made in a sustainable way</p> <p>DT7.3 know how to understand and research a product within the context of the world around them</p> <p>DT7.4 know how to create a detailed step-by step plan of the making process, utilising their knowledge of specific technical vocabulary and detailed sketches</p> <p>DT7.5 know how to design products using sketching skills and rendering and creating 3d designs where appropriate</p> |
| <p>DTR.5 know that designs can help shape our thinking before making • DT1.5 know how to use own design plan to make something • DT2.5 know how to make a mock-up of their design where appropriate (e.g. paper patterns for puppets) DTN.3 know how to safely explore a variety of tools • DTR.6 know how to choose the right resources to carry out their own plan, (e.g. cutting tool for the playdough) • DT1.6 know how to use tools safely for a specific purpose (e.g. to cut, shape or to join) • DT2.6 know how to identify and name a selection of hand tools • DT2.7 know how to choose tools and materials and explain why they have chosen them DTR.7 know different techniques for joining materials, such as how to use adhesive tape and different sorts of glue DT1.7 know how to assemble and join materials (including construction materials) using a variety of methods • DT2.8 know how to join materials and components in different ways • DT2.9 know how to cut and join fabric to make a simple product DTR.8 know how to thread</p> | <b>Make</b>   | <p>DT3.4 know how to select the most appropriate tools for a given task</p> <p>DT3.5 know how to choose the right equipment and materials (including textiles, construction materials and/or ingredients)</p> <p>DT3.6 know how to select the most appropriate technique for shaping and joining</p>                                              | <p>DT4.4 know which tools to use for a particular task and show knowledge of handling the tool</p> <p>DT4.5 know which material and/or component is likely to give the best outcome based on its properties</p> <p>DT4.6 know how to mark, measure, cut and join accurately</p>                                                         | <p>DT5.4 know how to make a prototype before making a final version</p> <p>DT5.5 know and use a range of tools and equipment competently and safely</p>                                                                                                                                                                                                                                                   | <p>DT6.4 know which tool to use for a specific practical task</p> <p>DT6.5 know how to use any tool correctly and safely</p> <p>DT6.6 know why a specific tool is best for a specific action</p>                                                                                                                                                | <p>DT7.6 know how to create prototypes and patterns dependant on subject area</p> <p>DT7.7 know the basic safety rules in the classroom and the workshop</p> <p>DT7.8 know the constraints of working in a school environment in comparison to industrial production</p> <p>DT7.9 know how to successfully mark and cut materials with increasing accuracy</p>                                                                                                                                                                                                                                      |

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| continuously (e.g. using lacing boards) • DT1.8 know how to use simple sewing techniques with support or scaffolded resource • DT2.10 know how to use simple sewing techniques DTR.9 know how to select the appropriate materials to create a desired aesthetics (e.g. applying feathers to a bird model) • DT2.11 know how to carry out finishing techniques that have been modelled by the teacher                                                                                                                                                                                                      |                            | DT3.7 know how to work accurately to measure, make cuts and make holes<br><br>DT3.8 know how to choose finishing techniques to improve the appearance of their products using a range of equipment including ICT                                                  | DT4.7 know how to sew, weave or knit using a range of stitches                                                                                                                                                                                                        | DT5.6 know how to carry out finishing techniques to enhance the appearance and function of their product                                                                                                                                                                                                                                                                                                                  | DT6.7 know how to pin, sew and stitch materials together to create a product                                                                                                                                                                                                                                                       | DT7.10 know how to use a range of temporary and permanent stitches by hand or machine<br><br>DT7.11 know how to apply finishing techniques to enhance a product                                                                                                                                                                                                                                                                                                         |
| DT1.9 know how to explore a range of existing products and describe what makes it work well to inform their own choices<br><br>DT2.12 know how to explore and evaluate a range of existing products describing what makes it work well and not so well to inform their own choices<br><br>DTR.10 know how to evaluate their product using appropriate vocabulary including how they might make it better<br><br>DT1.10 know what went well with their own work against a design criteria<br><br>DT2.13 know what was successful and less successful in the model they have made against a design criteria | <b>Evaluate</b>            | DT3.9 know why existing products have or have not been successful to inform their own designs<br><br>DT3.10 know why their own product has or has not been successful<br><br>DT3.11 know how to improve their finished product in relation to the design criteria | DT4.8 know how to evaluate existing products for both their purpose and appearance<br><br>DT4.9 know how to evaluate their own and others final product against the design criteria<br><br>DT4.10 know how to evaluate and suggest improvements for their own designs | DT5.7 know how to collect information from investigating existing products, research and using ICT where appropriate<br><br>DT5.8 know key events and individuals that have led to existing products<br><br>DT5.9 know how to evaluate appearance and function against the design criteria<br><br>DT5.10 know how to suggest alternative plans using feedback from others; outlining the positive features and draw backs | DT6.8 know how key events and individuals have shaped the products that exist today<br><br>DT6.9 know how to evaluate their own and others finished product against the design criteria<br><br>DT6.10 know how to test and evaluate their own prototype on a specified audience (where possible) and use feedback on final product | DT7.12 know how to analyse the work of past and present professionals and others to develop and broaden their understanding<br><br>DT7.13 know how to outline and justify how they have met the design specification<br><br>DT7.14 know how to evaluate your own and others work giving feedback based on the design specification<br><br>DT7.15 know the drawbacks of the product, design and making process and suggest improvements for all aspects                  |
| DT1.11 know how to make their own model stronger / stiffer<br><br>DT2.14 know how to make a model stronger, stiffer (if appropriate) and more stable<br><br>DT1.12 know how to make a simple product that moves • DT2.15 know how to use wheels and axles, when appropriate to do so • DT2.16 know how simple mechanisms work (e.g. sliders, levers, wheels and axels)                                                                                                                                                                                                                                    | <b>Technical Knowledge</b> | DT3.12 know how to strengthen a product by stiffening a given part or reinforce a part of the structure<br><br>DT3.13 know how to create a product with a simple mechanism (e.g. gears, pulleys, cams, levers and linkages)                                       | DT4.11 know how to apply scientific knowledge of electrical systems to their structural or mechanical product (e.g. series circuits incorporating switches, bulbs, buzzers and motors)                                                                                | DT5.11 know how to apply scientific knowledge to their product design by using pulleys, cams, gears, levers and linkages                                                                                                                                                                                                                                                                                                  | • DT6.11 know how to use knowledge to improve a made product by strengthening, stiffening or reinforcing<br><br>DT6.12 know how to use electrical systems correctly and accurately to enhance a given product                                                                                                                      | DT7.16 know and use the properties of materials and the performance of structural elements to achieve functioning solutions<br><br>DT7.17 know how more advanced mechanical systems used in their products enable changes in movement and force • DT7.18 know how more advanced electrical and electronic systems can be powered and used in their products [for example, circuits with heat, light, sound and movement as inputs and outputs] DT7.19 know how to apply |

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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                |                                                                                                                                                                                                                                                                                                           | DT4.12 know how to use IT where appropriate to add to the quality of the product (program, monitor and control)                                                                                                                                                                           | DT5.12 know how to use IT program to program, monitor and control their products                                                                                                                                                                                                    | DT6.13 know which IT product would further enhance a specific product                                                                                                                         | computing and use electronics to embed intelligence in products that respond to inputs [for example, sensors], and control outputs [for example, actuators], using programmable components [for example, microcontrollers] • DT7.20 know materials are made up of natural and manmade fibres • DT7.21 know how to enhance the aesthetic of a textile product using layering of materials (e.g. applique and mola)                                                                                                                                      |
| <p>TR.12 know the names of well-known fruit and vegetables</p> <p>DT1.13 know where fruit and vegetables come from</p> <p>DT2.17 know where a variety of foods come from</p> <p>DTR.13 know how to make some simple healthy food choices</p> <p>DTR.14 know the importance of healthy food choices</p> <p>DT1.14 know which foods are healthy and which are not</p> <p>DT2.18 know about foods that support good health and the risks of eating too much sugar</p> <p>DT1.15 know how to cut food safely</p> <p>DT1.16 know how to use basic food handling, hygiene practices and personal hygiene</p> <p>DT2.19 know how to follow safe procedures for food safety and hygiene</p> <p>DT1.17 know how to follow a given recipe to create a cold dish</p> <p>DT2.20 know how to follow a given healthy recipe to create a hot dish</p> | <b>Cooking &amp; Nutrition</b> | <p>DT3.14 know when food is available for harvesting and understand seasonality</p> <p>DT3.15 know what a balanced diet looks like</p> <p>DT3.16 know how to demonstrate hygienic food preparation</p> <p>DT3.17 know how to weigh out ingredients and follow a given healthy recipe to create a dish</p> | <p>DT4.13 know that animals are reared and caught for food</p> <p>DT4.14 know safe practices in the kitchen and can identify hazards (e.g. hazards when using an oven)</p> <p>DT4.15 know how to weigh and measure accurately (timings, dry ingredients and liquids) to create a dish</p> | <p>DT5.13 know where and how certain foods are processed</p> <p>DT5.14 know how to be both hygienic and safe in the kitchen</p> <p>DT5.15 know how to prepare a healthy meal by selecting the appropriate ingredients in the first place (using appropriate cooking techniques)</p> | <p>T6.14 know how to explain how food ingredients should be stored and give reasons</p> <p>DT6.15 know the difference between a savoury and sweet dish and select ingredients accordingly</p> | <p>DT7.22 know how to prepare a savoury meal taking into consideration healthy choices</p> <p>DT7.23 know food hygiene and safety standards including use of the fridge and preparation of the cooking station</p> <p>DT7.24 know how to make one adaptation to the ingredients to enhance the recipe • DT7.25 know how to recognise and be able to use a variety of cooking equipment • DT7.26 know the importance of weighing and measuring ingredients accurately • DT7.27 know how to experiment with one type of useful bacteria (e.g. yeast)</p> |