

*“Good buildings come from good people, and all problems are solved by good design.” (Stephen Gardiner)*

## Curriculum Learning Guide

# Design & Technology

How is DT taught at Low Ash?



## Curriculum Intent

At Low Ash Primary School we aim to provide children with a DT education that is relevant in today's modern world and provide skills that are transferable across the whole curriculum. We aim to encourage our children to problem solve and work creatively on both individual and shared projects. Lessons are developed to inspire children to think independently, innovatively and to develop their creative and technical understanding. We have planned our DT curriculum to allow children opportunities to research, represent ideas, explore, investigate and develop the practical expertise to make an end product. Evaluating their designs and that of others is an integral part of the process too.

## Implementation

Our D.T curriculum hopes to provide appropriate subject knowledge, skills and understanding (as set out in the National Curriculum Design Technology Programmes of study). Children will work in smaller groups on a rotational basis, receiving lessons from staff skilled in the appropriate curriculum provision. Children will be taught a wide range of topics including textiles, food and structures including woodwork; through this, children will develop their skills, vocabulary and resilience. We will always encourage pupils to use their own creativity and imagination to design and make products. We ask that they that solve real and relevant problems within a variety of contexts and design for a real life purpose. Here they are encouraged to consider their own and others' needs, wants and values during the planning stage. The planning is progressive and coherent, so children continue to build on prior knowledge and develop their own technical and practical expertise as they progress through the DT programme of study.

### In EYFS pupils will:

- Be encouraged to talk about what they are making and produce pencil sketch designs
- Be introduced to a variety of construction materials.
- Learn how to use tools safely and appropriately
- Be Shown how to construct, stack and stick create closed and open structures.
- Be encouraged to talk about if their design has worked and evaluate their success and how to make something better..
- Join in group cooking activities and learn how to chop, measure and stir independently.

In KS1 pupils will:

- Begin to design using their own ideas
- Create and annotate plans. Consider resources needed and the best materials to use.
- Use tools safely and appropriately, choosing the best tool for the job.
- Begin to look at how something works.
- Develop ideas on how to improve a design through carefully considered evaluation
- Weigh carefully and chop food safely.
- Understand cooking healthy food options
- How to select the best textiles for a project and simple joining stitches

In KS2 pupils will:

- Design following set criteria and will be able to explain their choices of the materials they selected
- Create a product for a specific purpose e.g. pencil cases, Victorian toys, felt key-rings
- Develop their skills and technical understanding by using more demanding equipment, such as the drill and hack saw.
- Evaluate designs referring back to product design criteria. Suggest improvements and strengthen the quality of their product.
- Begin to use simple IT software as part of the design process .
- Investigate where our food comes from and how it is processed. Start to consider seasonality when designing recipes throughout the year.
- Develop their technical understanding of scientific based systems e.g. gears and pulleys.

### Impact

Within our design and technology curriculum we aim to encourage pupils to combine practical skills with an understanding of aesthetic, social and environmental issues, as well as functions and industrial practices. This will allow them to reflect on and evaluate present and past design and technology, its uses and its impact. We want them to enjoy the subject and to be able to confidently apply skills to other areas of the curriculum. As designers, children will develop skills and attributes they can use beyond primary school, secondary, college and into adulthood.

**DT - end of year group expectations:  
Nursery EYFS  
Coverage:**

**Nursery**

<p><b>Designing-</b> Purposeful and functional Based on design criteria (generate ideas/model and communicate ideas/ draw/ make templates &amp; use of It where appropriate)</p>	<p><b>Making-</b> Using tools and equipment Cutting/shaping/ joining/ finishing) Selection of materials according to their characteristics</p>	<p><b>Evaluation-</b> Of Existing products Of ideas against design criteria</p>	<p><b>Technical Knowledge</b> Building structures Strengthening Explore mechanisms (wheels/axles/levers/slides)</p>	<p><b>Food Technology-</b> Preparing food Understanding a healthy and varied diet Understanding where food comes from</p>
<ul style="list-style-type: none"> <li>• Talk about what they are making</li> <li>• Pencil sketching (plans) for design builds</li> </ul>	<ul style="list-style-type: none"> <li>• Uses various construction materials</li> <li>• Beginning to construct, stack blocks vertically and horizontally, making enclosures and creating spaces</li> <li>• Experiments with blocks</li> <li>• Realises tools can be used for a purpose</li> </ul>	<ul style="list-style-type: none"> <li>• Discuss if it worked</li> </ul>	<ul style="list-style-type: none"> <li>• Stick</li> <li>• Stack</li> </ul>	<ul style="list-style-type: none"> <li>• Simple chopping of soft fruit under close supervision</li> <li>• Tasting a variety of foods</li> </ul>

**Greater depth Nursery**

<ul style="list-style-type: none"> <li>• Clear communication</li> <li>• Ideas generated from suggestions made or examples given.</li> </ul>	<ul style="list-style-type: none"> <li>• Competent use of tools and materials to produce a model with plan in mind</li> </ul>	<ul style="list-style-type: none"> <li>• Suggest how to improve models</li> </ul>	<ul style="list-style-type: none"> <li>• Trial and error observed when selecting ways to join materials (not just those suggested)</li> </ul>	<ul style="list-style-type: none"> <li>• Holds food carefully when chopping</li> </ul>
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**DT - end of year group expectations:  
Reception EYFS  
Coverage:**

Reception				
<p><b>Designing-</b> Purposeful and functional Based on design criteria (generate ideas/model and communicate ideas/ draw/ make templates &amp; use of It where appropriate)</p>	<p><b>Making-</b> Using tools and equipment Cutting/shaping/ joining/ finishing) Selection of materials according to their characteristics</p>	<p><b>Evaluation-</b> Of Existing products Of ideas against design criteria</p>	<p><b>Technical Knowledge</b> Building structures Strengthening Explore mechanisms (wheels/axles/levers/slides)</p>	<p><b>Food Technology-</b> Preparing food Understanding a healthy and varied diet Understanding where food comes from</p>
<ul style="list-style-type: none"> <li>• Discuss and plan before building</li> <li>• Pencil sketch design</li> <li>• Decide what materials to use</li> </ul>	<ul style="list-style-type: none"> <li>• Joins construction pieces together to build and balance.</li> <li>• Realises tools are used for a purpose</li> <li>• Constructs with a purpose in mind</li> <li>• Uses simple tools safely and appropriately</li> </ul>	<ul style="list-style-type: none"> <li>• Can talk about and evaluate their models. Did they work? Did they go wrong? How could they make it better?</li> </ul>	<ul style="list-style-type: none"> <li>• Explore structures</li> <li>• Trial and error</li> <li>• Can we stop it breaking?</li> </ul>	<ul style="list-style-type: none"> <li>• Simple chopping of soft fruit under close supervision</li> <li>• Tasting a variety of foods</li> <li>• Understanding of healthy and unhealthy foods</li> </ul>
Greater depth Reception				
<ul style="list-style-type: none"> <li>• Clear design and materials specifically selected for a task</li> </ul>	<ul style="list-style-type: none"> <li>• Understands the need for safety when using tools</li> <li>• Selects appropriate joining materials for task in hand</li> </ul>	<ul style="list-style-type: none"> <li>• Can alter design as needed during construction to improve end result</li> </ul>	<ul style="list-style-type: none"> <li>• Understands need for secure base when tower building</li> </ul>	<ul style="list-style-type: none"> <li>• Recognises how to use tool safely.</li> <li>• Understands why we need to eat healthily.</li> </ul>

**DT - end of year group expectations:  
Year 1  
Coverage:**

*Year 1*

<p><i>Designing- Purposeful and functional Based on design criteria (generate ideas/model and communicate ideas/ draw/ make templates &amp; use of It where appropriate)</i></p>	<p><i>Making- Using tools and equipment (Cutting/shaping/ joining/ finishing) Selection of materials according to their characteristics</i></p>	<p><i>Evaluation- Of Existing products Of ideas against design criteria</i></p>	<p><i>Technical Knowledge Building structures Strengthening Explore mechanisms (wheels/axles/levers/slide s)</i></p>	<p><i>Food Technology- Preparing food Understanding a healthy and varied diet Understanding where food comes from</i></p>
<ul style="list-style-type: none"> <li><i>• Use own ideas to design</i></li> <li><i>• Explain own ideas</i></li> <li><i>• Design product that moves</i></li> <li><i>• Make a simple plan before making</i></li> </ul>	<ul style="list-style-type: none"> <li><i>• Use own ideas</i></li> <li><i>• Make moving product</i></li> <li><i>• Choose appropriate resources and tools</i></li> </ul>	<ul style="list-style-type: none"> <li><i>• Describe how something works</i></li> <li><i>• Explain what works well/ not so well in their product</i></li> </ul>	<ul style="list-style-type: none"> <li><i>• Make a model stronger</i></li> </ul>	<ul style="list-style-type: none"> <li><i>• Cut food safety</i></li> </ul>

**Greater Depth Year 1**

<ul style="list-style-type: none"> <li><i>• Relate ideas to examples they have seen</i></li> <li><i>• Consider who would enjoy their design</i></li> </ul>	<ul style="list-style-type: none"> <li><i>• Explain why a certain tool is the best for a task</i></li> <li><i>• Develop and embellish moving product.</i></li> </ul>	<ul style="list-style-type: none"> <li><i>• Relate evaluation to products used</i></li> <li><i>• Compare products and discuss strengths and weaknesses</i></li> </ul>	<ul style="list-style-type: none"> <li><i>• Ability to use technical vocabulary to reasoning</i></li> </ul>	<ul style="list-style-type: none"> <li><i>• Understand how to keep themselves safe</i></li> </ul>
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**DT - end of year group expectations:  
Year 2  
Coverage:**

<i>Year 2</i>				
<i>Designing- Purposeful and functional Based on design criteria (generate ideas/model and communicate ideas/ draw/ make templates &amp; use of It where appropriate)</i>	<i>Making- Using tools and equipment (Cutting/shaping/ joining/ finishing) Selection of materials according to their characteristics</i>	<i>Evaluation- Of Existing products Of ideas against design criteria</i>	<i>Technical Knowledge Building structures Strengthening Explore mechanisms (wheels/axles/levers/slide s)</i>	<i>Food Technology- Preparing food Understanding a healthy and varied diet Understanding where food comes from</i>
<i>• Think of an idea then plan • Explain why then have chosen specific textiles</i>	<i>• Choose own tools and materials and explain why they have been chosen • Joining in different ways • Measuring materials</i>	<i>• Explain what worked</i>	<i>• Make a model stronger and more stable • Use wheels and axles when appropriate</i>	<i>• Weigh ingredients • Describe the ingredients used when making a dish or cake</i>
<i>Greater depth Year 2</i>				
<i>• Communicate the benefits of using select materials</i>	<i>• Accurate measuring • To alter joining methods as needed</i>	<i>• Explain what they would change if they carried out the activity again</i>	<i>• Understand how to improve the quality of the mechanism by considering the products used</i>	<i>• Independent weighing • Understand why ingredients are used in a recipe.</i>

**DT - end of year group expectations:  
Year 3  
Coverage:**

Year 3

<p><b>Designing-</b> Purposeful and functional Based on design criteria (generate ideas/model and communicate ideas/ draw/ make templates &amp; use of It where appropriate)</p>	<p><b>Making-</b> Using tools and equipment Cutting/shaping/ joining/ finishing) Selection of materials according to their characteristics</p>	<p><b>Evaluation-</b> Of Existing products Of ideas against design criteria</p>	<p><b>Technical Knowledge</b> Building structures Strengthening Explore mechanisms (wheels/axles/levers/slide s)</p>	<p><b>Food Technology-</b> Preparing food Understanding a healthy and varied diet Understanding where food comes from</p>
<ul style="list-style-type: none"> <li>• Prove a design meets the criteria</li> <li>• Design product and consider what it looks like</li> <li>• Choose materials for suitability and attractiveness</li> </ul>	<ul style="list-style-type: none"> <li>• Follow a plan</li> <li>• Select appropriate tools and methods for a task</li> <li>• Make a product with mechanical and electrical components</li> <li>• Measure and cut accurately</li> </ul>	<ul style="list-style-type: none"> <li>• Explain how to improve a finished model</li> <li>• Understand why a product has/hasn't worked</li> </ul>	<ul style="list-style-type: none"> <li>• Know how to strengthen (stiffening and reinforce parts of the structure)</li> <li>• Use simple IT program in the design</li> </ul>	<ul style="list-style-type: none"> <li>• Describe how food ingredients come together</li> <li>• Weigh ingredients and follow a recipe</li> <li>• Talk about healthy and unhealthy foods</li> <li>• Know when food is ready to harvest</li> </ul>

Greater depth Year 3

<ul style="list-style-type: none"> <li>• Refer back to design criteria in planning</li> </ul>	<ul style="list-style-type: none"> <li>• Be methodical in their preparation</li> <li>• Explain why each tool is appropriate for the task</li> <li>• Refer to scientific knowledge where appropriate</li> </ul>	<ul style="list-style-type: none"> <li>• Refer back to design criteria to see if design brief was met</li> <li>• Explain how to improve their product next time.</li> </ul>	<ul style="list-style-type: none"> <li>• Relate to previous knowledge</li> <li>• Competent use of ICT</li> </ul>	<ul style="list-style-type: none"> <li>• Know what is happening to ingredients when cooked/ baked</li> <li>• Follow a recipe independently</li> <li>• Suggest how to make the meal healthier.</li> </ul>
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**DT - end of year group expectations:  
Year 4  
Coverage:**

*Year 4*

<p><i>Designing- Purposeful and functional Based on design criteria (generate ideas/model and communicate ideas/ draw/ make templates &amp; use of It where appropriate)</i></p>	<p><i>Making- Using tools and equipment Cutting/shaping/joining/ finishing) Selection of materials according to their characteristics</i></p>	<p><i>Evaluation- Of Existing products Of ideas against design criteria</i></p>	<p><i>Technical Knowledge Building structures Strengthening Explore mechanisms (wheels/axles/levers/slide s)</i></p>	<p><i>Food Technology- Preparing food Understanding a healthy and varied diet Understanding where food comes from</i></p>
<ul style="list-style-type: none"> <li><i>• Design using other peoples ideas</i></li> <li><i>• Produce plan and explain it</i></li> <li><i>• Adapt and alter design as you go along</i></li> <li><i>• Communicate ideas (annotated sketches &amp; drawings)</i></li> </ul>	<ul style="list-style-type: none"> <li><i>• Know which tools to use</i></li> <li><i>• Knowledge to handling tools and equipment</i></li> <li><i>• Selecting materials for best outcome</i></li> <li><i>• Measure accurately</i></li> </ul>	<ul style="list-style-type: none"> <li><i>• Evaluate and suggest improvements</i></li> <li><i>• Evaluate functionality and appearance</i></li> <li><i>• Explain how original design has been improved</i></li> <li><i>• Present product in an interesting way</i></li> </ul>	<ul style="list-style-type: none"> <li><i>• Can use scientific knowledge to add switches/lights/buzzers</i></li> <li><i>• Use electrical systems to enhance product</i></li> <li><i>• Use IT to add to product</i></li> </ul>	<ul style="list-style-type: none"> <li><i>• Understand how to be hygienic and safe when handling food</i></li> <li><i>• Bring a creative element to food product being designed</i></li> </ul>

*Greater depth Year 4*

<ul style="list-style-type: none"> <li><i>• Annotated design with clear step by step instructions</i></li> <li><i>• Explaining why you need to change a design to improve the end product</i></li> </ul>	<ul style="list-style-type: none"> <li><i>• Relate back to previous scientific understanding to explain products needed and used</i></li> <li><i>• Identify measuring miscalculations and how this will effect end product.</i></li> </ul>	<ul style="list-style-type: none"> <li><i>• Use observed marketing ideas (from TV, magazines etc.) to sell own product</i></li> </ul>	<ul style="list-style-type: none"> <li><i>• Consider the user in the end product. Is it suitable for the job in which it is intended? Why? why not?</i></li> </ul>	<ul style="list-style-type: none"> <li><i>• Can explain what might happen if you do not follow hygienic practises</i></li> <li><i>• Collect ideas for end product</i></li> </ul>
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**DT - end of year group expectations:  
Year 5  
Coverage:**

*Year 5*

<p><i>Designing- Purposeful and functional Based on design criteria (generate ideas/model and communicate ideas/ draw/ make templates &amp; use of It where appropriate)</i></p>	<p><i>Making- Using tools and equipment Cutting/shaping/ joining/ finishing) Selection of materials according to their characteristics</i></p>	<p><i>Evaluation- Of Existing products Of ideas against design criteria</i></p>	<p><i>Technical Knowledge Building structures Strengthening Explore mechanisms (wheels/axles/levers/slide s)</i></p>	<p><i>Food Technology- Preparing food Understanding a healthy and varied diet Understanding where food comes from</i></p>
<ul style="list-style-type: none"> <li>• Collect information from a range of sources to come up with ideas</li> <li>• Produce a detailed step by step plan</li> <li>• Explain why the product will appeal to a certain audience</li> <li>• Design a product needing pulleys, gears or cams</li> </ul>	<ul style="list-style-type: none"> <li>• Use a range of tools and equipment competently</li> <li>• Make a prototype before final product</li> <li>• Make a product that requires pulleys, gears or cams</li> </ul>	<ul style="list-style-type: none"> <li>• Look at positive/negative features and suggest alternatives</li> <li>• Evaluate looks and function against original criteria</li> </ul>	<ul style="list-style-type: none"> <li>• Link scientific knowledge to gears, pulley, cams in design</li> <li>• Try to use more complex IT to help enhance the quality of design</li> </ul>	<ul style="list-style-type: none"> <li>• Understand hygiene and safety in the kitchen</li> <li>• Know how to prepare a meal (by collecting ingredients first)</li> <li>• Understand seasonal foods and harvesting</li> </ul>

*Greater depth Year 5*

<ul style="list-style-type: none"> <li>• Consider the resources available before starting design</li> <li>• Create annotated design board</li> </ul>	<ul style="list-style-type: none"> <li>• Identify any problems with the prototype before starting real design.</li> </ul>	<ul style="list-style-type: none"> <li>• Create a marketing questionnaire. Would your product appeal and sell? Who to?</li> </ul>	<ul style="list-style-type: none"> <li>• Create a detailed plan of design showing relevant scientific forces observed</li> </ul>	<ul style="list-style-type: none"> <li>• Consider costings when preparing a meal. Where is the best place to shop?</li> </ul>
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**DT - end of year group expectations:  
Year 6  
Coverage:**

Year 6

<p><b>Designing-</b> Purposeful and functional Based on design criteria (generate ideas/model and communicate ideas/ draw/ make templates &amp; use of It where appropriate)</p>	<p><b>Making-</b> Using tools and equipment Cutting/shaping/ joining/ finishing) Selection of materials according to their characteristics</p>	<p><b>Evaluation-</b> Of Existing products Of ideas against design criteria</p>	<p><b>Technical Knowledge</b> Building structures Strengthening Explore mechanisms (wheels/axles/levers/slides)</p>	<p><b>Food Technology-</b> Preparing food Understanding a healthy and varied diet Understanding where food comes from</p>
<ul style="list-style-type: none"> <li>• Use market research to inform plans and ideas</li> <li>• Follow up and improve original ideas</li> <li>• Justify planning and convince others</li> <li>• Demonstrate that culture and society is considered in plans and designs</li> </ul>	<ul style="list-style-type: none"> <li>• Know which tool to use for a specific task</li> <li>• Use tools correctly and safely</li> <li>• Know what each tool is used for</li> <li>• Explain why a specific tool is used and why it is the best to use</li> </ul>	<ul style="list-style-type: none"> <li>• Know how to test and evaluate designed products</li> <li>• Explain how products should be stored and give reasons why</li> <li>• Evaluate against product criteria</li> </ul>	<ul style="list-style-type: none"> <li>• Use electrical systems correctly to enhance product</li> <li>• Know how IT products could improve product</li> <li>• Improve product using knowledge of strengthening stiffening and reinforcing</li> </ul>	<ul style="list-style-type: none"> <li>• Explain how to store food and why</li> <li>• Work with a budget</li> <li>• Understands the difference between sweet and savoury dishes</li> </ul>

Greater Depth Year 6

<ul style="list-style-type: none"> <li>• Create fully annotated design brief. Fully explain reasoning behind design ideas</li> </ul>	<ul style="list-style-type: none"> <li>• Always consider safety when using tools.</li> <li>• Can demonstrate how to use tools to others.</li> <li>• Independent crafting.</li> </ul>	<ul style="list-style-type: none"> <li>• Compare a product with others.</li> <li>• Consider costings of product against original criteria and who would use it.</li> <li>• Does your product fully comply with design brief?</li> </ul>	<ul style="list-style-type: none"> <li>• Use technical knowledge built up through EYFS-Y6 in the making of different products to suggest and use select appropriate tools and materials.</li> </ul>	<ul style="list-style-type: none"> <li>• Market research- the best place to shop.</li> <li>• Also relate food storage to health and hygiene.</li> </ul>
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