



## Leonard Stanley C of E (VA) Primary School

### Design & Technology Progression

**Design & Technology progression ensures children learn a love of design and technology using a sequenced and progressive system to allow them to have a deep and rich understanding. Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation. The curriculum is also challenging, experiential and encourages quality, enhanced by our school's DEEP planning philosophy. Our progression document is based on the National Curriculum.**

#### National Curriculum Aims

- develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users
- critique, evaluate and test their ideas and products and the work of others
- understand and apply the principles of nutrition and learn how to cook

#### Vocabulary (Key stage 1)

Cut, shape, join, finish, build, design, function, product, select, tools, equipment, explore, evaluate, material, component, construct, textiles, ingredients, stronger, stiffer, stable, mechanisms, levers, sliders, wheels, axles, healthy, varied, diet

#### Vocabulary (Key stage 2)

All of the above and: enterprise, industry, the wider environment, sketch, annotate, diagram, cross-section, prototype, computer-aided design (CAD), functional properties, aesthetic quality, strengthen, stiffen, reinforce, gears, pulleys, cams, levers and linkages, circuits, series, switches, bulbs, buzzers and motors, programme, monitor, control, nutrition, savoury, seasonality, grown, reared, caught and processed

Curriculum Overview

|                   | Autumn 1                                                       | Autumn 2                                 | Spring 1                                        | Spring 2            | Summer 1                                          | Summer 2        |
|-------------------|----------------------------------------------------------------|------------------------------------------|-------------------------------------------------|---------------------|---------------------------------------------------|-----------------|
| <b>Year One</b>   | Superhero vehicles<br>Design fruit rockets<br>(Healthy eating) |                                          | Design a bus<br>Build fire of London<br>houses  | Design fruit pizzas |                                                   | Healthy picnics |
| <b>Year Two</b>   | Design and make<br>shield / crown                              | Design and make<br>Christmas decorations | Design and make healthy pasta salad             |                     |                                                   |                 |
| <b>Year Three</b> | Edible garden<br>Prepare 'eat well' meal                       |                                          | Bread bake off                                  |                     | Sewing – puppets / juggling balls to<br>entertain |                 |
| <b>Year Four</b>  | Design a chocolate bar                                         |                                          | Castles and Roses style object for a narrowboat |                     | Roman shields<br>Pizza                            |                 |
| <b>Year Five</b>  |                                                                | Automata animals                         |                                                 |                     | Marvellous creations - Vikings                    |                 |
| <b>Year Six</b>   | Medieval punishment                                            |                                          | Curry making                                    |                     | WW2 sewing                                        |                 |

**End of KS Expectations: Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts, such as the home and school, gardens and playgrounds, the local community, industry and the wider environment.**

|               | Reception                                                                                                                                                                                                                                                                                                             | Year 1                                                                                                                                                                                                                                                                                                                                                                                                                                      | Year 2                                                                                                                                                                                                                                                                                                                                                                                                 | End of KS1 expectations                                                                                                                                                                                                                                                                                              |
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| <b>Design</b> | <p>Constructs with a purpose in mind, using a variety of resources.</p> <p>Uses simple tools and techniques competently and appropriately.</p> <p>Selects appropriate resources and adapts work where necessary.</p> <p>Selects tools and techniques needed to shape, assemble and join materials they are using.</p> | <ul style="list-style-type: none"> <li>• Can I think of some ideas of my own?</li> <li>• Can I use pictures and words to plan? Can I design a product for myself following design criteria?</li> <li>• Can I think of some ideas of my own? Can I explain what I want to do? Can I describe my design by using pictures, model mock-ups and words? Can I design a product for myself and others following</li> </ul>                        | <ul style="list-style-type: none"> <li>• Can I think of ideas and plan what to do next?</li> <li>• Can I choose the best tools and materials?</li> <li>• Can I give a reason why these are best tools or materials?</li> <li>• Can I describe my design by using pictures, diagrams, model mock-ups, words and ICT?</li> <li>• Can I design a product for others following design criteria?</li> </ul> | <p>Design</p> <p>Design purposeful, functional, appealing products for themselves and other users based on design criteria</p> <p>Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology</p>            |
| <b>Make</b>   | <p>They use and explore a variety of materials, tools and techniques.</p> <p>They represent their</p>                                                                                                                                                                                                                 | <ul style="list-style-type: none"> <li>• Can I explain what I am making? Can I select tools and equipment to cut, shape, join and finish? Can I choose the right materials? Can I explain what I am making and why?</li> <li>• Can I select tools and equipment to cut, shape, join and finish?</li> <li>• Can I describe which tools I am using and why?</li> <li>• Can I choose materials and explain why they are being used?</li> </ul> | <ul style="list-style-type: none"> <li>• Can I explain what I am making and why my audience will like it? Can I join things (materials/ components) together in different ways?</li> <li>• Can I choose materials and explain why they are being used depending on their characteristics?</li> </ul>                                                                                                   | <p>Make</p> <p>Select from and use a range of tools and equipment to perform practical tasks such as cutting, shaping, joining and finishing</p> <p>Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics</p> |

|                     | Reception                                                       | Year 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Year 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | End of KS1 expectations                                                                                                                                                                                                                                                                                                                                     |
|---------------------|-----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Evaluate            | own ideas, thoughts and feelings through design and technology. | <ul style="list-style-type: none"> <li>Can I talk about my own work?</li> <li>Can I talk about existing products and say what is good and not so good about them?</li> <li>Can I describe how existing products work?</li> <li>Can I talk about my own work linked to what I was asked to do?</li> <li>Can I talk about my own work and things that other people have done?</li> </ul>                                                                                                                                                                                                                                                                                                | <ul style="list-style-type: none"> <li>Can I describe what went well with my work?</li> <li>Can I evaluate what I would do differently if I did it again and why?</li> <li>Can I judge my work against the design criteria?</li> </ul>                                                                                                                                                                                                                                        | <p>Evaluate</p> <p>Explore and evaluate a range of existing products</p> <p>Evaluate their ideas and products against design criteria</p>                                                                                                                                                                                                                   |
| Technical Knowledge |                                                                 | <p>Use of materials:</p> <ul style="list-style-type: none"> <li>Can I measure materials to use in a model or structure?</li> <li>Can I join material in different ways?</li> <li>Can I use joining, folding or rolling to make it stronger?</li> <li>Can I use levers or slides in my work?</li> </ul> <p>Cooking and nutrition:</p> <ul style="list-style-type: none"> <li>Can I describe the properties of the ingredients I am using and why it is important to be varied in my diet?</li> <li>Can I explain what it means to be hygienic?</li> <li>Can I keep a hygienic kitchen?</li> <li>Can I say where food comes from i.e. animals, underground, over ground etc?</li> </ul> | <p>Mechanisms:</p> <ul style="list-style-type: none"> <li>Can I join materials together as part of a moving product?</li> <li>Can I add a specific design to my product?</li> <li>Can I use axels and wheels in my work?</li> </ul> <p>Textiles:</p> <ul style="list-style-type: none"> <li>Can I measure textiles?</li> <li>Can I join textiles together to make something?</li> <li>Can I cut textiles?</li> <li>Can I explain why they chose a certain textile?</li> </ul> | <p>Technical knowledge</p> <p>Build structures, exploring how they can be made stronger, stiffer and more stable</p> <p>Explore and use mechanisms, such as levers, sliders, wheels and axles, in their products.</p> <p>Cooking and Nutrition Use the basic principles of a healthy and varied diet to prepare dishes Understand where food comes from</p> |

Key Stage 2

**End of KS Expectations: Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment.**

|                    | Year 3                                                                                                                                                                                                                                                                                                                                                      | Year 4                                                                                                                                                                                                                                                                                                                                                                                     | Year 5                                                                                                                                                                                                                                                                                                                                                  | Year 6                                                                                                                                                                                                                                                                                                            | End of KS2 Expectations                                                                                                                                                                                                                                                                                                                                                         |
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| <b>Design</b>      | <p>Can I show that my design meets a range of requirements?</p> <p>Can I put together a plan which shows the order and also what equipment and tools I need?</p> <p>Can I describe my design using an accurately labelled sketch and words?</p> <p>Can I say how realistic my plan is?</p> <p>Can I take account of the ideas of others when designing?</p> | <p>Can I come up with at least one idea about how to create my product?</p> <p>Can I take account of the ideas of others when designing?</p> <p>Can I put together a step-by-step plan which shows the order and also what equipment and tools I need and explain it to others?</p> <p>Can I suggest some improvements and say what was good and not so good about my original design?</p> | <p>Can I come up with a range of ideas after I have collected information?</p> <p>Can I take a user's view into account when designing?</p> <p>Can I produce a detailed step-by-step plan?</p> <p>Can I suggest some alternative plans and say what the good points and drawbacks are about each?</p> <p>Can I produce prototypes to show my ideas?</p> | <p>Can I use a range of information to inform my design?</p> <p>Can I use market research to inform plans?</p> <p>Can I work within constraints?</p> <p>Can I follow and refine my plan if necessary?</p> <p>Can I justify my plan to someone else?</p> <p>Can I use computer aided designs to show my ideas?</p> | <p>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 Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design</p> |
| <b><u>Make</u></b> | <p>Can I use equipment and tools accurately?</p> <p>Can I tell if my finished product is going to be good quality?</p>                                                                                                                                                                                                                                      | <p>Can I show I am conscience of the need to produce something that will be liked by others?</p> <p>Can I show a good level of expertise when using a range of tools and equipment?</p> <p>Can I explain how my product will appeal to the audience?</p> <p>Can I use a range of tools and equipment expertly?</p>                                                                         | <p>Can I explain why my finished product is going to be of good quality?</p> <p>Can I explain how my product will appeal to the audience?</p> <p>Can I use a range of tools and equipment expertly?</p> <p>Can I think about the aesthetic qualities of my work?</p> <p>Can I think about the functionality of my work?</p>                             | <p>Can I use tools and materials precisely?</p> <p>Do I change the way I am working if needed?</p> <p>Can I think about the aesthetic qualities of my work?</p> <p>Can I think about the functionality of my work?</p>                                                                                            | <p>Select from and use a wider range of tools and equipment to perform practical tasks, such as cutting, shaping, joining and finishing, accurately</p> <p>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.</p>                     |

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| <u>Evaluate</u>            | <p>Can I say what I would change which made my design even better?</p> <p>Can I practise my evaluation skills by evaluating existing products?</p> <p>Have I thought of how I will check if my design is successful?</p>                                                                                                | <p>Can I begin to explain how I can improve my original design?</p> <p>Can I evaluate my product, thinking of both appearance and the way it works?</p> <p>Can I practise my evaluation skills by evaluating existing products against set criteria?</p> | <p>Do I keep checking that my design is the best it can be?</p> <p>Can I check whether anything could be improved?</p> <p>Can I evaluate appearance and function against the original criteria?</p> <p>Can I test and evaluate my final product?</p> <p>Can I say if my product is fit for purpose?</p> <p>Can I practise my evaluation skills by evaluating existing products against criteria which I have set?</p> | <p>Can I test and evaluate my final product?</p> <p>Can I say if my product is fit for purpose?</p> <p>Can I evaluate what would improve it?</p> <p>Can I evaluate if different resources would have improved my product?</p> <p>Can I say if I would need more or different information to make it even better?</p> <p>Can I practise my evaluation skills by evaluating existing products against criteria which I have set?</p> | <p>Investigate and analyse a range of existing products</p> <p>Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work</p> <p>Understand how key events and individuals in design and technology have helped shape the world</p>            |
| <u>Technical Knowledge</u> | <p>Textiles:<br/>Can I join textiles of different types in different ways?</p> <p>Can I choose textiles both for their appearance and also qualities?</p> <p>Cooking and nutrition: Can I choose the right ingredients for a product? Can I use equipment safely? Can I make sure that my product looks attractive?</p> | <p>Textiles:<br/>Can I think what the user would want when choosing textiles?</p> <p>Can I think about how to make my product strong?</p> <p>Can I devise a template?</p> <p>Can I explain how to join things in a different way?</p>                    | <p>Electrical &amp; mechanical components:<br/>Can I incorporate a switch into my product?</p> <p>Can I refine my product after testing it?</p> <p>Can I incorporate hydraulics and pneumatics?</p> <p>Can I use different kinds of circuit in my product?</p>                                                                                                                                                        | <p>Electrical and mechanical components:<br/>Can I use different kinds of circuit in my product?</p> <p>Can I think of ways in which adding a circuit would improve my product?</p> <p>Mouldable materials: Can I consider the use of the product when selecting materials?</p>                                                                                                                                                    | <p>Apply their understanding of how to strengthen, stiffen and reinforce more complex structures</p> <p>Understand and use mechanical systems in their products, such as gears, pulleys, cams, levers and linkages</p> <p>Understand and use electrical systems in their products, such as series circuits</p> |