

## Long term Planning (Requirements and Key Progress Indicators) – Design, Technology, Cooking and Nutrition

### Purpose of study

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.

### Pre-National Curriculum (Generic skills)

P4	P5	P6	P7	P8	Early Years
<ul style="list-style-type: none"> <li>With help, begin to assemble components provided for an activity.</li> <li>Contribute to activities by coactively grasping and moving simple tools.</li> <li>Explore options within a limited range of materials.</li> </ul>	<ul style="list-style-type: none"> <li>Use a basic tool, with support.</li> <li>Demonstrate preferences for products, materials and ingredients.</li> </ul>	<ul style="list-style-type: none"> <li>Recognise familiar products and explore the different parts they are made from.</li> <li>Watch others using a basic tool and copy the actions.</li> <li>Begin to offer responses to making activities.</li> </ul>	<ul style="list-style-type: none"> <li>Operate familiar products, with support, and explore how they work.</li> <li>Use basic tools or equipment in simple processes, chosen in negotiation with the teacher.</li> <li>Begin to communicate preferences in designing and making.</li> </ul>	<ul style="list-style-type: none"> <li>Explore familiar products and communicate views about them when prompted.</li> <li>With help, manipulate a range of basic tools in making activities.</li> <li>Begin to contribute to decisions about what to do and how.</li> </ul>	<ul style="list-style-type: none"> <li>Manipulate materials to achieve a planned effect.</li> <li>Construct with purpose in mind, using a variety of resources.</li> <li>Select appropriate resources and adapt work where necessary.</li> <li>Select tools and techniques needed to shape, assemble and join materials.</li> <li>Create simple representations of events, people and objects.</li> </ul>

### National Curriculum Requirements: Key Stage One

When designing and making, pupils should be taught to:

#### Design

- Design purposeful, functional, appealing products for themselves and other users based on design criteria.
- Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology.

#### Make

- Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing].
- Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.

#### Evaluate

- Explore and evaluate a range of existing products.
- Evaluate their ideas and products against design criteria.

#### Technical knowledge

- Build structures, exploring how they can be made stronger, stiffer and more stable.
- Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.

#### Cooking and nutrition

- Use the basic principles of a healthy and varied diet to prepare dishes
- Understand where food comes from.

	Knowledge, Skills & understanding breakdown			Breadth of Study				
	Developing, planning & communicating ideas	Working with tools, equipment, materials and components to make quality products	Evaluating processes and products	Food/Horticulture	Textiles	Mechanisms	Use of Materials/ Structures	Construction/ Mouldable Materials
Year 1	<ul style="list-style-type: none"> <li>Think of some ideas of their own.</li> <li>Explain what they want to do.</li> <li>Use pictures and words to plan.</li> </ul>	<ul style="list-style-type: none"> <li>Explain what they are making.</li> <li>Explain and describe which tools they are using.</li> </ul>	<ul style="list-style-type: none"> <li>Describe how something works.</li> <li>Talk about their own work and things that other people have done.</li> </ul>	<ul style="list-style-type: none"> <li>Cut food safely.</li> <li>Describe the texture of foods.</li> <li>Wash their hands and make sure that surfaces are clean.</li> <li>Think of interesting ways of decorating food they have made, e.g. cakes.</li> </ul>	<ul style="list-style-type: none"> <li>Describe how different textiles feel.</li> <li>Make a product from textile by gluing.</li> </ul>	<ul style="list-style-type: none"> <li>Make a product which moves.</li> <li>Cut materials using scissors.</li> <li>Describe the materials using different words.</li> <li>Say why they have chosen moving parts.</li> </ul>	<ul style="list-style-type: none"> <li>Make a structure/model using different materials.</li> <li>Ensure their work is tidy.</li> <li>Make their model stronger if it needs to be.</li> </ul>	<ul style="list-style-type: none"> <li>Talk with others about how they want to construct their product.</li> <li>Select appropriate resources and tools for their building projects.</li> <li>Make simple plans before making objects, e.g. drawings, arranging pieces of construction before building.</li> </ul>
Year 2	<ul style="list-style-type: none"> <li>Think of ideas and plan what to do next.</li> <li>Choose the best tools and materials. Can they give a reason why these are best?</li> <li>Describe their design by using pictures, diagrams, models and words.</li> </ul>	<ul style="list-style-type: none"> <li>Join things (materials/ components) together in different ways.</li> </ul>	<ul style="list-style-type: none"> <li>Describe what went well with their work.</li> <li>Discuss about if they did it again, what they would want to improve.</li> </ul>	<ul style="list-style-type: none"> <li>Describe the properties of the ingredients they are using.</li> <li>Explain what it means to be hygienic.</li> <li>Explain how they are hygienic in the kitchen.</li> </ul>	<ul style="list-style-type: none"> <li>Measure textiles.</li> <li>Join textiles together to make something.</li> <li>Cut textiles.</li> <li>Explain why they chose a certain textile.</li> </ul>	<ul style="list-style-type: none"> <li>Join materials together as part of a moving product.</li> <li>Add some kind of design to their product.</li> </ul>	<ul style="list-style-type: none"> <li>Measure materials to use in a model or structure.</li> <li>Join material in different ways.</li> <li>Use joining, folding or rolling to make it stronger.</li> </ul>	<ul style="list-style-type: none"> <li>Make sensible choices as to which material to use for their constructions.</li> <li>Develop own ideas from initial starting points.</li> <li>Incorporate some type of movement into models.</li> <li>Consider how to improve their construction.</li> </ul>

**National Curriculum Requirements: Key Stage Two**

When designing and making, pupils should be taught to:

- Design**
- 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
- Make**
- Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
  - 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
- Evaluate**
- Investigate and analyse a range of existing products
  - Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
  - Understand how key events and individuals in design and technology have helped shape the world
- Technical knowledge**
- Apply their understanding of how to strengthen, stiffen and reinforce more complex structures
  - Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]
  - Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]
  - Apply their understanding of computing to program, monitor and control their products.
- Cooking and nutrition**
- Understand and apply the principles of a healthy and varied diet
  - Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques
  - Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.

Knowledge, Skills & understanding breakdown				Breadth of Study				
	Developing, planning & communicating ideas	Working with tools, equipment, materials and components to make quality products	Evaluating processes and products	Food/Horticulture	Textiles	Electrical and mechanical components	Stiff and flexible sheet materials	Mouldable Materials
Year 3	<ul style="list-style-type: none"> <li>• Show that their design meets a range of requirements.</li> <li>• Put together a step-by-step plan which shows the order and also what equipment and tools they need.</li> <li>• Describe their design using an accurately labelled sketch and words. How realistic is their plan?</li> </ul>	<ul style="list-style-type: none"> <li>• Use equipment and tools accurately.</li> </ul>	<ul style="list-style-type: none"> <li>• Make changes which make an initial design better.</li> </ul>	<ul style="list-style-type: none"> <li>• Choose the right ingredients for a product.</li> <li>• Use equipment safely.</li> <li>• Make sure that their product looks attractive.</li> <li>• Describe how their combined ingredients come together.</li> <li>• Set out to grow plants such as cress and herbs from seed with the intention of using them for their food product.</li> </ul>	<ul style="list-style-type: none"> <li>• Join textiles of different types in different ways.</li> <li>• Choose textiles both for their appearance and also qualities.</li> </ul>	<ul style="list-style-type: none"> <li>• Select the most appropriate tools and techniques to use for a given task.</li> <li>• Make a product which uses both electrical and mechanical components.</li> <li>• Use a simple circuit.</li> <li>• Use a number of components.</li> </ul>	<ul style="list-style-type: none"> <li>• Use the most appropriate materials.</li> <li>• Work accurately to make cuts and holes.</li> <li>• Join materials.</li> </ul>	<ul style="list-style-type: none"> <li>• Select the most appropriate materials.</li> <li>• Use a range of techniques to shape and mould.</li> <li>• Use finishing techniques.</li> </ul>
Year 4	<ul style="list-style-type: none"> <li>• Come up with at least one idea about how to create their product.</li> <li>• Take account of the ideas of others when designing.</li> <li>• Produce a plan and explain it to others.</li> <li>• Suggest some improvements and say what was good and not so good about their original design.</li> </ul>	<ul style="list-style-type: none"> <li>• Predict if their finished product is going to be good quality.</li> <li>• Produce something that will be liked by others.</li> <li>• Show a good level of expertise when using a range of tools and equipment.</li> </ul>	<ul style="list-style-type: none"> <li>• Check if a design is successful.</li> <li>• Begin to explain how to improve their original design.</li> <li>• Evaluate their product, thinking of both appearance and the way it works.</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure they complete work hygienically and safely.</li> <li>• Think about how to present their product in an interesting way.</li> </ul>	<ul style="list-style-type: none"> <li>• Think what the user would want when choosing textiles.</li> <li>• Think about how to make a product strong.</li> <li>• Devise a template.</li> <li>• Explain how to join things in a different way.</li> </ul>	<ul style="list-style-type: none"> <li>• Add things to their circuits.</li> <li>• Alter a product after checking it.</li> <li>• Try out new and different ideas.</li> </ul>	<ul style="list-style-type: none"> <li>• Measure carefully so as to make sure they have not made mistakes.</li> <li>• Attempt to make a product strong.</li> </ul>	<ul style="list-style-type: none"> <li>• Take time to consider how they could have made their idea better.</li> <li>• Work at their product even though their original idea might not have worked.</li> </ul>
Year 5	<ul style="list-style-type: none"> <li>• Come up with a range of ideas after they have collected information.</li> <li>• Take a user's view into account when designing.</li> <li>• Produce a detailed step-by-step plan.</li> <li>• Suggest some alternative plans and say what the good points and drawbacks are about each.</li> </ul>	<ul style="list-style-type: none"> <li>• Explain why their finished product is going to be of good quality.</li> <li>• Explain how their product will appeal to the audience.</li> <li>• Use a range of tools and equipment expertly.</li> </ul>	<ul style="list-style-type: none"> <li>• Keep checking that their design is the best it can be.</li> <li>• Check whether anything could be improved.</li> <li>• Evaluate appearance and function against the original criteria.</li> </ul>	<ul style="list-style-type: none"> <li>• Describe what they do to be both hygienic and safe.</li> <li>• Explain how they have presented their product to a good quality.</li> </ul>	<ul style="list-style-type: none"> <li>• Think what the user would want when choosing textiles.</li> <li>• Explain how they have made their product attractive and strong.</li> <li>• Make a prototype for a product before attempting the final version.</li> <li>• Use a range of joining techniques.</li> </ul>	<ul style="list-style-type: none"> <li>• Incorporate a switch into their product.</li> <li>• Refine their product after testing it.</li> <li>• Incorporate hydraulics and pneumatics.</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure measurements are accurate enough to ensure that everything is precise.</li> <li>• Ensure their product is strong and fit for purpose.</li> </ul>	<ul style="list-style-type: none"> <li>• Refine and improve their product.</li> <li>• Persevere through different stages of the making process.</li> </ul>

Year 6	<ul style="list-style-type: none"> <li>Use a range of information to inform their design.</li> <li>Use market research to inform plans.</li> <li>Work within constraints.</li> <li>Follow and refine their plan if necessary.</li> <li>Justify their plan to someone else.</li> <li>Consider culture and society in their designs.</li> </ul>	<ul style="list-style-type: none"> <li>Use tools and materials precisely.</li> <li>Change the way they are working if needed.</li> </ul>	<ul style="list-style-type: none"> <li>Test and evaluate their final product and consider:             <ul style="list-style-type: none"> <li>Is it fit for purpose?</li> <li>What would improve it?</li> <li>Would different resources have improved their product?</li> <li>Would they need more or different information to make it even better?</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Explain how their product should be stored with reasons.</li> <li>Set out to grow their own products with a view of making a salad, taking account of time required to grow different foods.</li> </ul>	<ul style="list-style-type: none"> <li>Think about how their product could be sold.</li> <li>Give considered thought about what would improve their product even more.</li> </ul>	<ul style="list-style-type: none"> <li>Use different kinds of circuits in their products.</li> <li>Think of ways in which adding a circuit would improve their product.</li> </ul>	<ul style="list-style-type: none"> <li>Justify why they selected specific materials.</li> <li>Work within a budget.</li> <li>Ensure that their work is precise and accurate.</li> <li>Hide joints so as to improve the look of their product.</li> </ul>	<ul style="list-style-type: none"> <li>Consider the use of the product when selecting materials.</li> <li>Ensure their product meets all design criteria.</li> </ul>
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**Post-National Curriculum Key Stage Two Requirements (Years 7, 8 and 9)**

Design and technology opportunities	Mastering practical skills	Designing, making, evaluating and improving	Taking inspiration from design throughout history
<p>Work in a number of fields including:</p> <ul style="list-style-type: none"> <li>Materials (including textiles)</li> <li>Horticulture</li> <li>Electricals and electronics</li> <li>Construction</li> <li>Mechanics</li> <li>Cooking</li> <li>Emerging areas of design and technology (such as food design, design for disability, and age-related design).</li> </ul>	<ul style="list-style-type: none"> <li>Increase skills, knowledge and competence in using materials, machinery, technique and processes.</li> <li>Complete common practical, diagnostic, repair and maintenance tasks and multi-stage processes.</li> <li>Develop well-conceived and well-executed practical solutions.</li> <li>Select and use complex tools, equipment, machinery and techniques skilfully.</li> <li>Develop sophisticated practical skills and carry out diagnostic, repair and maintenance tasks in a range of contexts.</li> <li>Explore materials and technological developments, and experiment with using them.</li> <li>Understand the importance of nutrition, a balanced diet and about the characteristics of a broad range of ingredients in choosing and preparing food.</li> <li>Cook a repertoire of savoury meals and become confident in a range of cooking techniques.</li> </ul>	<ul style="list-style-type: none"> <li>Plan, design, make and evaluate a range of quality products, in a variety of materials that are fit for purpose.</li> <li>Communicate ideas and designs skilfully and accurately in 2D and 3D, using a variety of techniques, including computing.</li> </ul>	<ul style="list-style-type: none"> <li>Analyse the work of others, including iconic designs, to inform work.</li> <li>Use historical and contextual references to influence and improve work.</li> <li>Understand developments in design and technology and the responsibilities of designers, including environmental responsibilities.</li> </ul>