# Riverview CofE Primary and Nursery School
# Design and Technology Curriculum Overview

## Early Learning Goals linked to DT

**In the Early Years DT is taught through:**

- The Characteristics of Effective Learning, specifically *Creating and thinking critically – thinking:*
  Having their own ideas/ Making links/ Choosing ways to do things

- The Early Learning Goal: *Expressive arts and design: Exploring and using media and materials:*
  Children sing songs, make music and dance, and experiment with ways of changing them. They safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.

## KS1 NC objectives

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 [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment].

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]

## KS2 NC objectives

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 [for example, the home, school, leisure, culture, enterprise, industry and the wider environment].
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**

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| • select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics<br>**Evaluate**<br>• explore and evaluate a range of existing products<br>• evaluate their ideas and products against design criteria<br>**Technical knowledge**<br>• build structures, exploring how they can be made stronger, stiffer and more stable<br>• explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.<br><br>**Cooking and nutrition**<br>As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life.<br>Pupils should be taught to:<br>• use the basic principles of a healthy and varied diet to prepare dishes<br>• understand where food comes from | | | | • select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately<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<br>**Evaluate**<br>• 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<br>• understand how key events and individuals in design and technology have helped shape the world<br>**Technical knowledge**<br>• apply their understanding of how to strengthen, stiffen and reinforce more complex structures<br>• understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]<br>• understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]<br>• apply their understanding of computing to program, monitor and control their products.<br><br>**Cooking and nutrition**<br>As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life.<br>Pupils should be taught to:<br>• understand and apply the principles of a healthy and varied diet<br>• prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques<br>• understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. | | |
| | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |

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| **Designing** – *Understanding contexts, users and purposes* | Work confidently within a range of contexts, such as imaginary, storybased, home, school, gardens, playgrounds, local community.<br><br>State what products they are making.<br><br>Say whether their products are for themselves or other users. | Work confidently within a range of contexts, such as imaginary, storybased, home, school, gardens, playgrounds, local community, **industry and the wider environment.**<br><br>State what products they are making.<br><br>**Say how their products will work.**<br><br>Say whether their products are for themselves or other users.<br><br>**Say how they will make their products suitable for their intended users.** | Work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment.<br><br>Gather information about needs and wants of particular individuals and groups<br><br>Say how their products will work.<br><br>Say how they will make their products suitable for their intended users. | Work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment.<br><br>Gather information about needs and wants of particular individuals and groups<br><br>**Indicate the design features of their products that will appeal to intended users.** | Carry out research, using surveys, interviews, questionnaires and web-based resources.<br><br>Indicate the design features of their products that will appeal to intended users**.**<br><br>Develop a simple design specification to guide their thinking | Carry out research, using surveys, interviews, questionnaires and web-based resources.<br><br>**Identify the needs, wants, preferences and values of particular individuals and groups**<br><br>Develop a simple design specification to guide their thinking |
| **Designing** - *Generating, developing, modelling and communicating ideas* | Generate ideas by drawing on their own experiences.<br><br>Use knowledge of existing products to help come up with ideas. | Generate ideas by drawing on their own and **other people's experiences.**<br><br>Develop and communicate ideas by talking and drawing.<br><br>Model ideas by exploring materials, | Generate ideas by drawing on their own and other people's experiences**.**<br><br>Model their ideas using prototypes and pattern pieces<br><br>Use computer-aided design to develop and | **Share and clarify ideas through discussion**<br><br>**Make labelled drawings from different views showing specific features** | Share and clarify ideas through discussion/ brainstorming<br><br>Make labelled drawings from different views showing specific features | Share and clarify ideas through discussion/ brainstorming<br><br>**Use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas** |

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| | Develop and communicate ideas by talking and drawing.<br><br>Model ideas by exploring materials, components and construction kits and by making templates and mockups.<br><br>Use ICT, where appropriate, to develop and communicate their ideas. | components and construction kits and by making templates and mockups.<br><br>Use ICT, where appropriate, to develop and communicate their ideas. | communicate their ideas<br><br>Generate realistic ideas, focusing on the needs of the user | Model their ideas using prototypes and pattern pieces<br><br>Use computer-aided design to develop and communicate their ideas<br><br>Generate realistic ideas, focusing on the needs of the user | Model their ideas using prototypes and pattern pieces<br><br>Use computer-aided design to develop and communicate their ideas | **Generate innovative ideas, drawing on research** |
| **Making -** *Planning* | Select from a range of tools and equipment<br><br>Select from a range of materials and components according to their characteristics | Select from a range of tools and equipment, **explaining their choices**.<br><br>Select from a range of materials and components according to their characteristics | Select tools and equipment suitable for the task.<br><br>Select materials and components suitable for the task. | **Explain their choice of tools and equipment in relation to the skills and techniques they will be using.**<br><br>Select materials and components suitable for the task. | Explain their choice of materials and components according to functional properties and aesthetic qualities<br><br>Produce appropriate lists of tools, equipment and materials that they need. | Explain their choice of materials and components according to functional properties and aesthetic qualities<br><br>Produce appropriate lists of tools, equipment and materials that they need.<br><br>**Formulate step-by-step plans as a guide to making** |
| **Making –** *Practical skills and techniques* | Learn about the movement of simple mechanisms such as | Learn about the movement of simple mechanisms such as | How to use learning from science and maths to help design | How to use learning from science and maths to help design | How to use learning from science and maths to help design | How to use learning from science and maths to help design |

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| | levers, sliders, wheels and axles.<br><br>How freestanding structures can be made stronger, stiffer and more stable.<br><br>With help measure, mark out, cut and shape a range of materials<br><br>Use tools eg scissors and a hole punch safely<br><br>Assemble, join and combine materials and components together using a variety of temporary methods | levers, sliders, wheels and axles.<br><br>How freestanding structures can be made stronger, stiffer and more stable<br><br>**Learn that a 3-D textiles product can be assembled from two identical fabric shape.**<br><br>**Know the correct technical vocabulary for the projects they are undertaking** | and make products that work.<br><br>That materials have both functional properties and aesthetic qualities.<br><br>Use the correct technical vocabulary for the projects they are undertaking.<br><br>How mechanical systems such as levers and linkages or pneumatic systems create movement<br><br>How simple electrical circuits and components can be used to create functional products.<br><br>How to make strong, stiff shell structures | and make products that work.<br><br>That materials have both functional properties and aesthetic qualities.<br><br>**That materials can be combined and mixed to create more useful characteristics.**<br><br>Use the correct technical vocabulary for the projects they are undertaking.<br><br>How mechanical systems such as levers and linkages or pneumatic systems create movement<br><br>How simple electrical circuits and components can be used to create functional products.<br><br>How to program a computer to control their products.<br><br>How to make strong, stiff shell structures | and make products that work.<br><br>Use the correct technical vocabulary for the projects they are undertaking.<br><br>How mechanical systems such as cams or pulleys or gears create movement.<br><br>How more complex electrical circuits and components can be used to create functional products.<br><br>How to program a computer to monitor changes in the environment and control their products.<br><br>How to reinforce and strengthen a 3D framework.<br><br>That a 3D textiles product can be made from a combination of fabric shapes.<br><br>Measure and mark out accurately. | and make products that work.<br><br>Use the correct technical vocabulary for the projects they are undertaking.<br><br>How mechanical systems such as cams or pulleys or gears create movement.<br><br>How more complex electrical circuits and components can be used to create functional products.<br><br>How to program a computer to monitor changes in the environment and control their products.<br><br>How to reinforce and strengthen a 3D framework.<br><br>That a 3D textiles product can be made from a combination of fabric shapes.<br><br>Measure and mark out accurately. |

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| | | | | **Sew using a range of different stitches, weave and knit•** T11 that a recipe can be adapted by adding or substituting one or more ingredients | Cut and join with accuracy to ensure a good quality finish to the product | Cut and join with accuracy to ensure a good quality finish to the product<br><br>**Make modifications as they go along** |
| **Cooking & nutrition** | Know that all food comes from plants or animals.<br><br>How to name and sort foods into the five groups in The Eatwell Plate<br><br>That everyone should eat at least five portions of fruit and vegetables every day.<br><br>How to prepare simple dishes safely and hygienically, without using a heat source.<br><br>How to use techniques such as cutting, peeling and grating | **That food ingredients should be combined according to their sensory characteristics**<br><br>Know that all food comes from plants or animals.<br><br>How to name and sort foods into the five groups in The Eatwell Plate<br><br>That everyone should eat at least five portions of fruit and vegetables every day.<br><br>How to prepare simple dishes safely and hygienically, without using a heat source.<br><br>How to use techniques such as cutting, peeling and grating | Know that food is grown, reared or caught in the UK, Europe and the wider world.<br><br>How to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source<br>How to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.<br><br>That a healthy diet is made up from a variety and balance of different food and drink, as depicted in The Eatwell Plate | Know that food is grown, reared or caught in the UK, Europe and the wider world.<br><br>How to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source.<br><br>How to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.<br><br>That a healthy diet is made up from a variety and balance of different food and drink, as depicted in The Eatwell Plate | That seasons may affect the food available<br><br>How food is processed into ingredients that can be eaten or used in cooking<br><br>How to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source.<br><br>How to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking<br><br>That recipes can be adapted to change the appearance, taste, texture and aroma. | That seasons may affect the food available<br><br>How food is processed into ingredients that can be eaten or used in cooking<br><br>How to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source.<br><br>How to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking<br><br>That recipes can be adapted to change the appearance, taste, texture and aroma. |

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| | | | That to be active and healthy, food and drink are needed to provide energy for the body | That to be active and healthy, food and drink are needed to provide energy for the body | That different food and drink contain different substances – nutrients, water and fibre – that are needed for health | That different food and drink contain different substances – nutrients, water and fibre – that are needed for health |
| **Evaluating –** *Own ideas and products* | Evaluate their product by discussing how well it works in relation to the purpose<br><br>Evaluate their product by asking questions about what they have made and how they have gone about it | Evaluate against their design criteria<br><br>Evaluate their products as they are developed, identifying strengths and possible changes they might make<br><br>Talk about their ideas, saying what they like and dislike about them | Evaluate their product against original design criteria e.g. how well it meets its intended purpose.<br><br>Disassemble and evaluate familiar products | Evaluate their work both during and at the end of the assignment<br><br>Evaluate their products carrying out appropriate tests | Evaluate an existing product against the original design specification<br><br>Evaluate it personally and seek evaluation from others | Evaluate their products, identifying strengths and areas for development, and carrying out appropriate tests<br><br>Record their evaluations using drawings with labels<br><br>Evaluate against their original criteria and suggest ways that their product could be improved |