

Design & Technology Curriculum

At Riverside, we strive to provide a program of learning opportunities for all pupils to gain the basic knowledge and understanding, which underpin design and technology. In addition, we endeavour to provide continuity and progression for all pupils throughout the curriculum as they move through the school. We aim to ensure health and safety of all pupils during design and technology activities.

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. At Riverside, 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.

Early Years Foundation Stage

Nursery and Reception follow the Early Years Foundation Stage statutory framework for the teaching of Design Technology. DT is found within the specific areas Understanding the World: Technology and, mainly, Expressive Arts and Design: Exploring and using media and materials, and, Expressive Arts and Design, being imaginative. Objectives and Early Learning Goals detail the knowledge, skills and understanding for DT within the EYFS. The children are provided with a range of opportunities to use a variety of materials, tools and techniques in a safe explorative environment. They have access to technological toys and books as well as a range of other design or technological equipment and materials. They have ample opportunity to talk about their designs, how to change and improve them, and design again through adult support, questioning, and a variety of adult-led opportunities.

Nursery:

In nursery children should complete the following as part of their curriculum:

Expressive arts and design: Exploring and using media and materials

- Uses various construction materials
- Beginning to construct, stacking blocks horizontally and vertically, making enclosures and creating spaces.

- Joins construction pieces together to build and balance.
- Realises tools can be used for a purpose.

Expressive arts and design: Being imaginative

- Uses available resources to create props to support role-play.

Understanding the world: Technology

- Shows an interest in technological toys with knobs or pulleys.
- Shows skill in making toys work by pressing parts or lifting flaps to achieve effects.

Reception:

In reception, children should complete the following as part of their curriculum:

Expressive arts and design: Exploring and using media and materials •

Understands that different media can be combined to create new effects.

- Manipulates materials to achieve a planned effect.
- Constructs with a purpose in mind, using a variety of resources.
- Uses simple tools and techniques competently and appropriately.
- Selects appropriate resources and adapts work where necessary.
- Selects tools and techniques needed to shape, assemble and join materials they are using.
- They safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.

Key Stage One

When designing and making, pupils should be taught to:

- 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
- 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
- explore and evaluate a range of existing products
- evaluate their ideas and products against design criteria
- 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
- use the basic principles of a healthy and varied diet to prepare dishes • understand where food comes from.

Year One:

Developing, planning and communicating ideas.

- Draw on their own experience to help generate ideas.
- Suggest ideas and explain what they are going to do.
- Identify a target group for what they intend to design and make.
- Model their ideas in card and paper.
- Develop their design ideas applying findings from their earlier research.

Working with tools, equipment, materials and components to make quality products (including food)

- Make their design using appropriate techniques.
- With help measure, mark out, cut and shape a range of materials.

- Use tools eg scissors and a hole punch safely.
- Assemble, join and combine materials and components together using a variety of temporary methods e.g. glues or masking tape.
- Select and use appropriate fruit and vegetables, processes and tools.
- Use basic food handling, hygienic practices and personal hygiene.
- Use simple finishing techniques to improve the appearance of their product.

Evaluating processes and products

- Evaluate their product by discussing how well it works in relation to the purpose.
- Evaluate their products as they are developed, identifying strengths and possible changes they might make.
- Evaluate their product by asking questions about what they have made and how they have gone about it.

Year Two:

Developing, planning and communicating ideas:

- Generate ideas by drawing on their own and other people's experiences
- Develop their design ideas through discussion, observation , drawing and modelling.
- Identify a purpose for what they intend to design and make.
- Identify simple design criteria.
- Make simple drawings and label parts

Working with tools, equipment, materials and components to make quality products (including food):

- Begin to select tools and materials; use vocab to name and describe them.
- Measure, cut and score with some accuracy.
- Use hand tools safely and appropriately.

- Assemble, join and combine materials in order to make a product.
- Cut, shape and join fabric to make a simple garment. Use basic sewing techniques.
- Follow safe procedures for food safety and hygiene.
- Choose and use appropriate finishing techniques.

Evaluating processes and products:

- Evaluate against their design criteria.
- Evaluate their products as they are developed, identifying strengths and possible changes they might make.
- Talk about their ideas, saying what they like and dislike about them.

Key Stage Two

When designing and making, pupils should be taught to:

- 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
- 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
- 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
- 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

- 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.

Year Three:

Developing, planning and communicating ideas.

- Generate ideas for an item, considering its purpose and the users.
- Identify a purpose and establish criteria for a successful product.
- Plan the order of their work before starting.
- Explore, develop and communicate design proposals by modelling ideas. • Make drawings with labels when designing

Working with tools, equipment, materials and components to make quality products (including food):

- Select tools and techniques for making their product. Measure, mark out, cut, score and assemble components with more accuracy.
- Work safely and accurately with a range of simple tools.
- Think about their ideas as they make progress and be willing change things if this helps them improve their work.
- Measure, tape or pin, cut and join fabric with some accuracy.
- Demonstrate hygienic food preparation and storage.
- Use finishing techniques strengthen and improve the appearance of their product using a range of equipment including ICT.

Evaluating processes and products:

- Evaluate their product against original design criteria e.g. how well it meets its intended purpose.

- Disassemble and evaluate familiar products.

Year Four:

Developing, planning and communicating ideas.

- Generate ideas, considering the purposes for which they are designing.
- Make labelled drawings from different views showing specific features.
- Develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making, if the first attempts fail.
- Evaluate products and identify criteria that can be used for their own designs.

Working with tools, equipment, materials and components to make quality products (including food):

- Select appropriate tools and techniques for making their product.
- Measure, mark out, cut and shape a range of materials, using appropriate tools, equipment and techniques.
- Join and combine materials and components accurately in temporary and permanent ways.
- Sew using a range of different stitches, weave and knit.
- Measure, tape or pin, cut and join fabric with some accuracy.
- Use simple graphical communication techniques

Evaluating processes and products:

- Evaluate their work both during and at the end of the assignment.
- Evaluate their products carrying out appropriate tests.

Year five:

Developing, planning and communicating ideas:

- Generate ideas through brainstorming and identify a purpose for their product.

- Draw up a specification for their design.
- Develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making if the first attempts fail.
- Use results of investigations, information sources, including ICT when developing design ideas

Working with tools, equipment, materials and components to make quality products (including food):

- Select appropriate materials, tools and techniques.
- Measure and mark out accurately.
- Use skills in using different tools and equipment safely and accurately.
- Weigh and measure accurately (time, dry ingredients, liquids).
- Apply the rules for basic food hygiene and other safe practices e.g. hazards relating to the use of ovens.
- Cut and join with accuracy to ensure a good-quality finish to the product.

Evaluating processes and products:

- Evaluate a product against the original design specification.
- Evaluate it personally and seek evaluation from others.

Year Six:

Developing, planning and communicating ideas:

- Communicate their ideas through detailed labelled drawings.
- Develop a design specification.
- Explore, develop and communicate aspects of their design proposals by modelling their ideas in a variety of ways.
- Plan the order of their work, choosing appropriate materials, tools and techniques

Working with tools, equipment, materials and components to make quality products (including food):

- Select appropriate tools, materials, components and techniques.
- Assemble components make working models.
- Use tools safely and accurately.
- Construct products using permanent joining techniques.
- Make modifications as they go along.
- Pin, sew and stitch materials together create a product.
- Achieve a quality product

Evaluating processes and products:

- Evaluate their products, identifying strengths and areas for development, and carrying out appropriate tests.
- Record their evaluations using drawings with labels.
- Evaluate against their original criteria and suggest ways that their product could be improved.

Meeting the needs of children with SEN

Children with special educational needs will be encouraged in all aspects of Design Technology appropriate to their ability. Teachers will plan tasks to match their ability and additional support may be given by a support teacher to enable pupils to progress and demonstrate achievement.

Provision will be made for pupils who need to use –

- Means of communication other than speech, including computers.
- Non-sighted methods of reading.
- Technological aids.
- Aids to allow access to practical activities within and beyond school