



The Ribblesdale Federation of Schools

Design Technology Curriculum

Handbook Year A

(Updated for 2023 - 2024 Curriculum)

Design and Technology

Aim:

- 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. (2014 N.C)

Intent

At the Ribblesdale Federation of Schools, we intend to build a Design Technology curriculum which develops learning and results in the acquisition of knowledge and skills. Children will know more, remember more and understand more.

We intend to design a design technology curriculum with appropriate subject knowledge, skills and understanding as set out in the National Curriculum Design Technology Programmes of study, to fulfil the duties of the NC whereby schools must provide a balanced and broadly-based curriculum which promotes the spiritual, moral, cultural, mental and physical development of pupils and prepares them for the opportunities and responsibilities and experiences for later life

EYFS

This subject leader handbook is for the national curriculum. There is a separate EYFS handbook which shows the EYFS long-term curriculum. The EYFS curriculum is holistic and therefore a number of areas of learning will link to this subject and support children to be immersed in Design Technology.

Implementation

Clear and comprehensive scheme of work in line with the National Curriculum. The Design Technology National Curriculum and EYFS is planned for and covered in full within the EYFS, KS1 and KS2 school curriculum. Whilst the EYFS and National Curriculum forms the foundation of our curriculum, we make sure that children learn additional skills, knowledge and understanding and enhance our curriculum as and when necessary.

Delivery of design and technology projects with a clear structure. Each class will undertake a construction topic, a textile topic and a food/drink topic.

Projects follow the design process where each project fulfils the following: research, design, make and evaluate.

Each class has a garden plot/ planter and takes ownership and responsibility for cultivating the relevant crops.

A range of skills will be taught ensuring that children are aware of health and safety issues related to the tasks undertaken

Clear and appropriate cross curricular links to underpin learning in multi areas across the curriculum giving the children opportunities to learn life skills and apply skills to 'hands on' situations in a purposeful context.

Children will undertake design tasks and use skills from across the curriculum to fully explore the design process evaluating work ensuring that it is of the highest possible quality. These project books will be thoroughly assessed against the curriculum objective. Children are also asked to self-evaluate their work.

Design Technology displays in every school alongside the three-dimensional creations. These displays celebrate exceptional practice and exemplify terminology and vocabulary used.

Independent learning: In design technology children may well be asked to solve problems and develop their learning independently. This allows the children to have ownership over their curriculum and lead their own learning in Design Technology.

Collaborative learning: In design and technology children may well be asked to work as part of a team, learning to support and help one another in order to achieve challenging, yet rewarding goal.

Impact

Children will have a clear enjoyment and confidence in design and technology that they will then apply to other areas of the curriculum.

Children will ultimately know more, remember more and understand more about Design Technology, demonstrating this knowledge when using tools or skills in other areas of the curriculum and in opportunities out of school.

The large majority of children will achieve age related expectations in Design Technology.

As designers' children will develop skills and attributes they can use beyond school and into adulthood

Design and technology programmes of study: key stages 1 and 2

Schools are not required by law to teach the example content in [square brackets].

Subject content Key stage 1

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]

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.

Key stage 2 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

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

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. Pupils should be taught to:

Key stage 1

Use the basic principles of a healthy and varied diet to prepare dishes

Understand where food comes from.

Key stage 2

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.

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Design Technology – Key Areas

Cooking and Nutrition

- Where food comes from
- Balanced diet
- Preparation and cooking skills
- Kitchen hygiene and safety
- Following recipes

Mechanisms/Mechanical Systems

- Mimic natural movements using mechanisms, such as cams, followers, levers and slides.

Structures

- Material functional and aesthetic properties.
- Strength and stability
- Stiffen and reinforce structures.

Textiles

- Fastening, sewing, decorative and functional fabric techniques
- Cross stitch, blanket stitch and applique

Electrical Systems

- Operational series circuits, circuit components
- Circuit diagrams and symbols, combined to create various electrical products.

Digital World

- Program products to monitor and control, develop designs and virtual models using 2D and 3D CAD software.

Design Technology

	Structures	Mechanisms	Textiles
Key Stage One	<p>Build structures such as windmills and chairs, exploring how they can be made stronger, stiffer and more stable.</p> <p>Recognise areas of weakness through trial and error.</p>	<p>Introduce and explore simple mechanisms, such as sliders, wheels and axles in their design.</p> <p>Recognise where mechanisms such as these exist in toys and other familiar products.</p>	<p>Explore different methods of joining fabrics and experiment to determine the pros and cons of each technique.</p>
Key Stage Two	<p>Continue to develop KS1 exploration skills, through more complex builds such as pavilion and bridge designs.</p> <p>Understand material selection and learn methods to reinforce structures.</p>	<p><u>Mechanism systems</u></p> <p>Extend pupils understanding of individual mechanisms to form part of a functional system for example.</p> <p>Automatas that use a combination of cams, followers, axles, shaft, cranks and toppers.</p>	<p>Understand that fabric can be layered for effect, recognising the appearance and technique for different stitch and fastening types, including their;</p> <ul style="list-style-type: none"> •Strength •Appropriate use •Design

Design Technology

	Cooking and Nutrition	Electrical Systems	Digital World
Key Stage One	Learn about the basic rules of a healthy and varied diet to create dishes. Understand where food comes from, for example plants and animals.	<p>.**Key Stage 2 only</p> <p>Create functional electrical products that use series circuits, incorporating different components such as bulbs, LEDs, switches, buzzers and motors. Consider how the materials used in these products can;</p> <ul style="list-style-type: none"> • Protect the circuitry • Reflect light • Conduct electricity • Insulate 	<p>.**Key Stage 2 only</p> <p>Learn how to develop an electric product with processing capabilities. Apply Computing principles to program functions within a product including to control and monitor it. Understand how history and evolution of product design lead to the on-going Digital revolution and the impact it is having in the world today.</p>
Key Stage Two	Understand and apply the principles of a healthy and varied diet to prepare and cook a variety of dishes using a range of cooking techniques and methods. Understand what is meant by seasonal foods. Know where and how ingredients are sourced.		

Design Technology – The Design Process

Design	<ul style="list-style-type: none"> • Research • Design criteria (e/g/ tailoring to an audience/user). • Idea generation (e.g. annotated sketches).
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	<ul style="list-style-type: none"> • Idea development (e.g. templates, pattern pieces). • Models and prototypes (both virtual and physical). • Cross sectional and exploded diagrams. • Innovated, fit-for-purpose and functional product solutions to design problems.
Make	<ul style="list-style-type: none"> • Select and use appropriate tools and equipment. • Understand and select materials and components (including ingredients) based on their aesthetic and functional properties. • Carry out practical tasks with increasing accuracy and precision. • Understand the importance of, and follow the health and safety rules.
Evaluate	<ul style="list-style-type: none"> • Explore existing products. • Evaluate a list of design criteria. • Evaluate, investigate and analyse existing products. • Evaluate their own and others' ideas. • Understand how key events and individuals have helped to shape the world of DT. • Consider feedback to make improvements.
Healthy Eating RHSE Statutory Guidance	
Know what constitutes a healthy diet (including understanding calories and other nutritional content).	
Know the principles of planning and preparing a range of healthy meals.	

Know the characteristics of a poor diet and risks associated with unhealthy eating (including, for example, obesity and tooth decay) and other behaviours (e.g. the impact of alcohol on diet or health).

Year 1 Topics

Windmills – Class 1

In Year 1 we...

Structures Skills and knowledge

- Explore how to make structures stronger
- Investigate different techniques for stiffening a variety of materials.
- Test different methods of enabling structures to remain stable.
- Join appropriately for different materials and situation.
- Mark out materials to be cut using a template
- Use a glue gun with close supervision.

Design

- Model ideas with kits, reclaimed materials.
- Explore ideas by rearranging materials
- Select picture to help develop ideas
- Use drawings to record ideas as they develop.

Make

- Discuss their work as it progresses.
- Select materials from a limited range that will meet the design criteria.
- Describe what they need to do next
- Name tools and equipment, they are using.

Evaluate

- Note changes made during the making process as annotation to plans/drawings
- Say what they like and do not like about items they have made and attempt to say why.

Smoothies – Class 1

In Year 1 we...

Food Skills and knowledge

- To identify fruits.
- To describe where fruits and vegetables grow.
- To practise food preparation skills.
- To select ingredients for a recipe.
- To apply food preparation skills to a recipe.
- To evaluate against the design brief.

Design

- Selects appropriate techniques explaining: First...Next...Last....
- Use pictures and words to help convey what they want to make.

Make

- Discuss their work as it progresses
- Explain what they are making
- Describe what they need to do next.

Evaluate

- Explore existing products and investigate how they have been made.
- Discuss how closely their finished product meets their design criteria and how it meets the needs of the user.

Moving Pictures – Class 1

In Year 1 we...

Mechanisms Skills and knowledge

- Join appropriately for different materials and situations e.g. glue, tape.
- Try out different axle fixings and their strengths and weaknesses.
- Make vehicles with construction kits which contain free running wheels.
- Use a range of materials to create models with wheels and axles e.g. tubes, dowel, cotton reels.
- Cut dowel using hacksaw and bench hook.
- Attach wheels to a chassis using an axle.
- Use a hole punch

Design

- Use pictures and words to convey what they want to design/make.
- Propose more than one idea for their product.
- Use kits/reclaimed materials to develop more than one idea.
- Model ideas with kits, reclaimed materials.
- Select appropriate technique explaining: First... Next... Last....
- Select pictures to help develop ideas.
- Use drawings to record ideas as they are developed.
- Add notes to drawings to help explanations.

Make

- Discuss their work as it progresses.
- Select materials from a limited range that will meet the design criteria.

- Select and name the tools needed to work the materials.
- Explain what they are making.

Evaluate

- Explore existing products and investigate how they have been made.
- Talk about their design as they develop and identify good and bad points.
- Note changes made during the making process as annotation to plans/drawings.
- Say what they like and do not like about items they have made and attempt to say why

Year 2 and 3

Purses Class 2

In Year 2 we...

Textiles Skills and knowledge

- Join fabrics by using e.g. running stitch, glue, staples, over sewing, tape.
- Decorate fabric with attached item e.g. buttons, beads, sequins, braids, ribbons.

Design

- Use pictures and words to convey what they want to make.
- Propose more than one idea for their product
- Select pictures to help develop ideas.
- Add notes to drawing to help explanations.

Make

- Discuss their work as it progresses
- Explain which materials they are using and why.
- Describe what they need to do next.

Evaluate

- Note changes made during the making process as annotations on plans/drawings.

In Year 3 we...

Textiles Skills and knowledge

- Develop vocabulary for tools, materials and their properties.
- Use prototypes to make patterns
- Use appropriate decoration techniques
- Join Fabrics using **running stitch**, over sewing or blanket stitch.

Design

- Develop more than one design or adaption of an initial design.
- Plan a sequence of actions to make a product.
- Record the plan by drawing using annotated sketches
- Propose realistic suggestions as to how they can achieve their design ideas.
- Consider aesthetic qualities of materials chosen.

Make

- Use tools with accuracy
- Select from techniques for different parts of the process
- Plan the stages of the making process
- Use appropriate finishing techniques.

Evaluate

- Investigate similar products to the one being made to give starting points for a design.

- Talk about their design as they develop and identify good and bad points.

- Draw or sketch products to help analyse and understand how products are made.
- Decide which design idea to develop
- Discuss how well the finished product meets the design criteria of the user.

A Balanced Diet – Class 2

In Year 2 we...

Food Skills and knowledge

- Develop a food vocabulary using taste, smell, texture and feel.
- Cut, peel, grate and chop a range of ingredients.
- Work safely and hygienically.
- Understand the need for a variety of foods in a diet.

Design

- Selects appropriate techniques explaining: First...Next...Last....
- Use pictures and words to help convey what they want to make.
- Purpose more than one idea for their product.

Make

- Discuss their work as it progresses
- Explain what they are making
- Describe what they need to do next.

Evaluate

- Explore existing products and investigate how they have been made.
- Discuss how closely their finished product meets their design criteria and how it meets the needs of the user.

In Year 3 we...

Food Skills and knowledge

- Develop sensory vocabulary/knowledge using, smell, taste, texture and feel.
- Analyse the taste, texture, smell and appearance of a range of foods (Predominantly savoury).
- Explore seasonality of vegetables and fruits.

Design

- Plan a sequence of actions to make a product.
- Think ahead about the order of their work and decide upon tools and materials
- Consider aesthetic qualities of materials chosen.

Make

- Select from techniques for different parts of the process.
- Plan the stages of the making process.

Evaluate

- Investigate similar products to the one to be made to give starting points for a design.
- Consider and explain how the finished product could be improved.
- Discuss how well the finished product meets the design criteria of the user.

Constructing A Castle – Class 2

In Year 2 we...

Structure Skills and knowledge

Design

- Use pictures and words to convey what they want to design/make.
- Propose more than one idea for their product.
- Select appropriate technique explain: First...Next...Last....
- Explore ideas by rearranging ideas
- Add notes to drawings to help explanations.

Make

- Discuss their work as it progresses
- Select and name the tools needed to work the materials
- Explain which materials they are using and why.
- Describe what they need to do next

Evaluate

- Decide how existing products do/do not achieve their purpose.
- Note changes made during the making process as annotation to plans/drawing.

In Year 3 we...

Structure Skills and knowledge

Design

- Develop more than one design or adaptation of an initial design
- Plan a sequence of actions to make a product.
- Begin to use cross-sectional and exploded diagrams.
- Think ahead about the order of their work and decide upon tools and materials

Make

- Prepare pattern piece as templates for their design.
- Cut internal shapes.
- Use tools with accuracy
- Select from techniques for different parts of the process
- Use appropriate finishing techniques.

Evaluate

- Investigate similar products to the one to be made to give starting points for a design.
- Research needs of user.
- Decide which design idea to develop.

- Discuss how closely their finished product meets their design criteria and how well meets the needs of the user.

- Consider and explain how the finished product could be improved.

Year 4, 5 and 6

Stuffed Toys – Class 3

In Year 4 we...

Textiles Skills and knowledge

- Develop vocabulary for tools, materials and their properties.
- Use prototypes to make patterns
- Use appropriate decoration techniques
- Join Fabrics using running stitch, over sewing or blanket stitch.

Design

- Develop more than one design or adaption of an initial design.
- Plan a sequence of actions to make a product.
- Record the plan by drawing using annotated sketches
- Propose realistic suggestions as to how they can achieve their design ideas.
- Consider aesthetic qualities of materials chosen.

Make

- Use tools with accuracy
- Select from techniques for different parts of the process
- Plan the stages of the making process

In Years 5 and 6 we...

Textiles Skills and knowledge

- Use the correct vocabulary appropriate to the project.
- Create 3D products using patterns pieces and seam allowance.
- Understand pattern layout.
- Decorate textiles appropriately (often before joining components).
- Pin and tack fabric pieces together.
- Join fabrics using over sewing, back stitch, blanket stitch or machine stitching (closer supervision).

Design

- Record ideas using annotated diagrams.
- Devise step by step plans which can be read / followed by someone else.
- Sketch and model alternative ideas.
- Decide which design idea to develop.

Make

- Develop one idea in depth.
- Produce detailed lists of materials and tools.
- Cut accurately and safely to a marked line.
- Select from and use a wide range of materials.
- Use appropriate finishing techniques for the project.
- Refine their product – review and rework/improve.

Evaluate

- Consider user and purpose.
- Identify the strengths and weaknesses of their design ideas.
- Give a report using correct technical vocabulary.

<ul style="list-style-type: none">• Use appropriate finishing techniques. <p><u>Evaluate</u></p> <ul style="list-style-type: none">• Investigate similar products to the one being made to give starting points for a design.• Draw or sketch products to help analyse and understand how products are made.• Decide which design idea to develop• Discuss how well the finished product meets the design criteria of the user.	<ul style="list-style-type: none">• Consider and explain how the finished product could be improved related to design criteria.• Discuss how well the finished product meets the design criteria of the user. Test on the user!• Understand how key people have influenced design.
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Sling Shot Cars – Class 3

In Year 4 we...

Mechanisms Skills and knowledge

- Develop vocabulary related to the project.
- Use mechanical systems such as gears, pulleys, levers and linkages pneumatic systems.
- Use lolly sticks/card to make levers and linkages.
- Use linkages to make movement larger or more varied.

Design

- Develop more than one design or adaptation of an initial design.
- Plan a sequence of actions to make a product.
- Record the plan by drawing using annotated sketches.
- Use prototypes to develop and share ideas.
- Think ahead about the order of their work and decide upon tools and materials.

Make

- Prepare pattern pieces as templates for their design.
- Cut slots.
- Cut internal shapes.
- Select from a range of tools for cutting shaping joining and finishing.
- Use tools with accuracy.

In Years 5 and 6 we...

Mechanisms Skills and knowledge

- Develop a technical vocabulary appropriate to the project.
- Use mechanical systems such as cams, pulleys and gears.
- Use electrical systems such as motors.

Design

- List tools needed before starting the activity.
- Record ideas using annotated diagrams.
- Use models, kits and drawings to help formulate design ideas.
- Combine modelling and drawing to refine ideas.
- Devise step by step plans which can be read / followed by someone else.
- Use exploded diagrams and cross-sectional diagrams to communicate ideas.
- Sketch and model alternative ideas.
- Decide which design idea to develop

Make

- Make prototypes.
- Develop one idea in depth.
- Use researched information to inform decisions.
- Produce detailed lists of ingredients / components / materials and tools.
- Use a computer to model ideas.
- Cut accurately and safely to a marked line.
- Use appropriate finishing techniques for the project.
- Refine their product – review and rework/improve.

Evaluate

- Investigate similar products to the one to be made to give starting points for a design.
- Draw/sketch products to help analyse and understand how products are made.
- Identify the strengths and weaknesses of their design ideas in relation to purpose/user.
- Decide which design idea to develop.
- Consider and explain how the finished product could be improved.
- Discuss how well the finished product meets the design criteria of the user.

Evaluate

- Research and evaluate existing products (including book and web-based research).
- Consider user and purpose.
- Identify the strengths and weaknesses of their design ideas.
- Understand how key people have influenced design.

Come Dine with Me – Class 3

In Year 4 we...

Food Skills and knowledge

- Develop sensory vocabulary/knowledge using, smell, taste, texture and feel.
- Analyse the taste, texture, smell and appearance of a range of foods (Predominantly savoury).
- Explore seasonality of vegetables and fruits.

Design

- Plan a sequence of actions to make a product.
- Think ahead about the order of their work and decide upon tools and materials
- Consider aesthetic qualities of materials chosen.

Make

- Select from techniques for different parts of the process.
- Plan the stages of the making process.

Evaluate

- Investigate similar products to the one to be made to give starting points for a design.
- Consider and explain how the finished product could be improved.
- Discuss how well the finished product meets the design criteria of the user.

In Year 6 we...

Food Skills and knowledge

- Prepare food products considering the properties of ingredients and sensory characteristics.
- Weigh and measure using scales.
- Work safely and hygienically.
- Show awareness of a healthy diet (using the eatwell plate).
- Know where and how ingredients are grown and processed.

Design

- Devise step by step plans which can be read / followed by someone else.
- Decide which idea to develop.

Make

- Develop one idea in depth.
- Produce detailed lists of ingredients / components / materials and tools.
- Use appropriate finishing techniques for the project.
- Refine their product – review and rework/improve.

Evaluate

- Consider user and purpose.
- Identify the strengths and weaknesses of their ideas.
- Give a report using correct technical vocabulary.
- Discuss how well the finished product meets the design criteria of the user. Test on the user!