



West Tyne Church Schools Federation

Design Technology Long Term Plan



Reception Explore and use a variety of tools and materials to express their interests and enquiries and develop their thinking - drawing, cooking, constructing, joining, transporting. Create collaboratively sharing ideas, resources and skills. Early Learning Goals · Safely explore and use a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. · Share their creations, explaining the process they have used.	Year 1/2 Stable structures In this module children will explore how structures can be made more stable with a wide base and extra added weight to the base. They will apply these skills in designing and making a stable pencil pot	Year 1/2 A chair for a bear Children will explore how the thickness of a material and the shape of a material affect its strength. Using this knowledge children will make a strong and stable chair.	Year 3/4 Eating seasonally This module focuses on teaching children about seasonal foods and how importing foods impacts the environment. Children will design, make and evaluate a savoury tart considering nutritional benefits.	Year 3/4 Adapting a recipe Children will adapt an existing biscuit recipe whilst considering the cost of ingredients and other expenses against a set budget to suit a target audience. This module develops food safety and hygiene rules.	Year 5/6 Gears and pulleys In this unit children will explore the history, mechanics and uses of gears and pulleys. Then apply their understanding to make a gear and a pulley system and design an eco-bike that harnesses the energy from an exercise bike	Year 5/6 Automata toys In this module, pupils design and make an automata toy. They develop ideas, explore cam profiles, and create fol-lower toppers. Children measure, mark, saw and assemble safely, decorate thoughtfully, and evaluate their toy's function and overall effectiveness.
	Wheels and axles In this module children explore how a wheel's shape, smoothness and attachment affect movement. Children will design and make a pull-along toy that uses a simple mechanism.	Making a moving monster In this module children explore, levers, linkages and pivots through existing products and experimentation. Children will use this research to construct and assemble a moving monster.	Pneumatics In this module the children will design and communicate their ideas through annotated sketches and diagrams. Using their research of pneumatic systems and their design brief children will make a pneumatic toy.	Mechanical cars In this module children will build a simple car chassis. They will then make and design mechanical cars that use different methods of movement	Bridges In this unit children will test and analyse different bridges to determine their strength and stability. They will then explore material properties and sources, before marking, sawing and assembling a wooden truss bridge.	Playground pioneers Pupils research existing playground equipment and their different forms before designing apparatus to meet specific criteria. They communicate ideas through sketches and 3D CAD and strengthen prototypes using triangulation.
	Smoothies This module teaches children the preparatory skills of chopping and blending, with an increased focus on taste testing and ingredient choices. They will use this knowledge and skill to create a smoothie that meets a design brief.	A balanced diet This module teaches children about the main food groups and the importance of a balanced diet. Using this knowledge children will design and create a tasty wrap taking into consideration flavour combinations.	Fastenings In this unit, pupils explore fastening mechanisms used in everyday products (e.g. buttons, Velcro, zips, toggles and press studs) considering how effective they are. They then devise a list of design criteria to design, generate templates and make a fabric sleeve book.	Egyptian collars This project builds on the children's knowledge of sewing and decorating fabric by introducing cross-stitch and applique. Children will design, and make an Egyptian collar representing their unique personalities.	Stuffed toys In this project children will design a stuffed toy and make decisions on materials, decorations and attachments (appendages). Children will make a template for their stuffed toy and join two pieces of fabric using a blanket stitch.	Bags This project builds on prior knowledge of nets to create 3D structures. Pupils explore pattern pieces and fabric construction to design and make their own bags. They will select suitable materials, cut accurately, join securely, and evaluate their product's function and quality.
	Simple stitches This project teaches children how fabrics are made and used. They learn how to thread a needle and make simple stitches before designing and making a piece of celebratory bunting.	Pouches In this module children will prepare and cut fabric from a template. Children will learn how to sew a running stitch, with neat evenly spaced stitches to join two pieces of fabric together to make a pouch.	Product packaging This module explores how 3D shell structures are created from nets. Children will investigate their use in packaging. Using sketchpad (CAD) they will design and make their own packaging for a healthy snack	Helmets In this module children will explore shell structures, investigating how they are strengthened to protect or contain. They will then apply this knowledge to design and construct their own helmets.	Developing a recipe In this module children will learn a simple bolognese recipe and adapt it to improve nutritional content. This module will develop the children's food preparation skills.	Come dine with me In this project children select three recipes to create a three-course meal. They explore basic tastes and complementary flavours. Children will learn what happens to a certain food before it appears on the supermarket shelf.
	Designer for the Day					

Stable structures

1. Explore and evaluate a range of existing products.
2. Design purposeful, functional, appealing products for themselves and other users based on design criteria.
3. Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology.
4. Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing].
5. Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.
6. Build structures, exploring how they can be made stronger, stiffer and more stable.
7. Evaluate their ideas and products against design criteria.

Wheels and axles

1. Design purposeful, functional, appealing products for themselves and other users based on design criteria.
2. Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology.
3. Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing].
4. Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.
5. Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.
6. Explore and evaluate a range of existing products.
7. Evaluate their ideas and products against design criteria.

Smoothies

1. Understand where foods come from.
2. Select from and use a range of tools and equipment to perform practical tasks.
3. Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.
4. Use the principles of a healthy and varied diet to prepare dishes.



Simple stitches (**Designer for the Day**)

1. Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing].
2. Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.
3. Design purposeful, functional, appealing products for themselves and other users based on design criteria.
4. Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology.
5. Explore and evaluate a range of existing products.
6. Evaluate their ideas and products against design criteria.



A chair for a bear

1. Explore and evaluate a range of existing products.
2. Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing].
3. Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.
4. Build structures, exploring how they can be made stronger, stiffer and more stable.
5. Design purposeful, functional, appealing products for themselves and other users based on design criteria.
6. Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology.
7. Evaluate their ideas and products against design criteria.

Making a moving monster

1. Explore and evaluate a range of existing products.
2. Explore and use mechanisms [for example, levers, sliders, wheels and axles] in their products.
3. Design purposeful, functional, appealing products for themselves and other users based on design criteria.
4. Generate, develop, model and communicate their ideas through talking and drawing, templates, mock-ups and, where appropriate, information and communication technology.
5. Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.
6. Evaluate their ideas and products against design criteria.

A balanced diet

1. Use the basic principles of a healthy and varied diet to prepare dishes.
2. Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing].
3. Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.



Pouches (**Designer for the Day**)

1. Select from and use a range of tools and equipment to perform practical tasks.
2. Design purposeful, functional, appealing products for themselves and other users.
3. Select from and use a wide range of materials and components, including construction materials, textiles and ingredients according to their characteristics.
4. Evaluate their ideas and products against a design criteria.



Eating Seasonally

1. Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.
2. Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.
3. Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques.
4. 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.

Pneumatics toys

1. 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.
2. Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.
3. Investigate and analyse a range of existing products.
4. Understand how key events and individuals in design and technology have helped shape the world.
5. Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages].
6. Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.
7. shaping, joining and finishing], accurately.
8. 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.
9. Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.
- 10 Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.

Fastenings

1. Investigate and analyse a range of existing products.
2. 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.
3. Evaluate their ideas and products against their own design criteria.
4. 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.
5. Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.
6. Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.
7. Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.



Product packaging (Designer for the Day)

1. Investigate and analyse a range of existing products.
2. 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.
3. Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.
4. Apply their understanding of computing to program, monitor and control their products.
5. Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.
6. Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.
7. Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.

Adapting a recipe

1. Investigate and analyse a range of existing products.
2. Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.
3. Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques.
4. 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.
5. 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.
6. Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.

Mechanical cars

1. 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.
2. Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.
3. Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.
4. 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.
5. Understand how key events and individuals in design and technology have helped shape the world.
6. Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.
7. Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages].
8. Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.

Egyptian collars

1. Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.
2. Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.
3. Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.
4. 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.
5. Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.



Helmets (Designer for the Day)

1. 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.
2. Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.
3. 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.
4. Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.
5. Investigate and analyse a range of existing products.
6. Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.



Gears and pulleys

1. Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.
2. Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.
3. 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.
4. 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.
5. Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.
6. Understand how key events and individuals in design and technology have helped shape the world.

Bridges

1. 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.
2. Generate, develop, model and communicate their ideas through discussion and prototypes.
3. Select from and use a wider range of materials and components, including construction materials, according to their functional properties and aesthetics qualities.
4. Select from and use a wider range of tools and equipment to perform practical tasks [for example cutting, shaping, joining and finishing] accurately.
5. Investigate and analyse a range of existing products.
6. Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.
7. Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.

Stuffed toys

1. Generate, develop, model and communicate their ideas through discussions, annotated sketches, cross sectional and exploded diagrams, prototypes, pattern pieces and computer aided design.
2. Select from and use a wider range of tools and equipment to perform practical tasks. [for example, cutting, shaping, joining and finishing] accurately.
3. Apply their understanding of how to strengthen, stiffen, and reinforce more complex structures.
4. Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.



Developing a recipe (Designer for the Day)

1. Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.
2. Understand and apply the principles of a healthy and varied diet.
3. Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques.
4. Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.
5. Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.



Automata toys

1. 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.
2. Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.
3. Understand how key events and individuals in design and technology have helped shape the world.
4. Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.
5. 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.
6. Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages].
7. Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.

Playground pioneers

1. 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.
2. Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.
3. Investigate and analyse a range of existing products.
4. Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.
5. Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.
6. 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.
7. Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.
8. Understand how key events and individuals in design and technology have helped shape the world.

Bags

1. Investigate and analyse a range of existing products.
2. Understand how key events and individuals in design and technology have helped shape the world.
3. Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.
4. 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.
5. Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.
6. 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.
7. Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.



Come dine with me (Designer for the Day)

1. 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.
2. 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.
3. Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques.
4. Understand and apply the principles of a healthy and varied diet.
5. Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.
6. Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.
7. 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.
8. Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.