Pennine Way Primary School

Design & Technology Curriculum and Skills Plan

National Curriculum Objectives and skills

Design and Technology curriculum at Pennine Way

Our Design and Technology Curriculum enthusiastically brings collaboration to the classroom. Where the skills and knowledge of; designing, structures, mechanisms, control and materials, are meaningful and more importantly they are made fun. Health and safety skills intrinsically support our use of tools, electrical systems and cooking appliances as we develop, model and evaluate our products. Feel, taste and bring to life your imagination.

Design and Technology Recovery Curriculum focus

Critical content for our recovery curriculum in Design and Technology has been evaluated and our priority is on based around lost content and critical content needed for progression and links between concepts to be made.

The design process is a focus of our curriculum to enable the pupil's knowledge and firsthand experience of using a range of materials, equipment and tools to be extended and explored rather than too much emphasis being placed upon the end product. We want to embrace children's creativity and ideas for their own designs and to make choices about materials used.

In terms of 'Make' skills, critical content needed for progression and as building blocks will be prioritised, e.g. running stitch in Year 1, to enable pupils to be able to complete sewing in Year 2. Within 'Technical Knowledge', understanding how structures and mechanisms work will be prioritised.

Cooking and Nutrition is a key priority as a life skill for our pupils and an area that pupils have large gaps in. We will revisit learning from previous year groups where necessary, e.g. if they missed basic skill development in chopping or grating we can revisit this. By the end of Key Stage 2 our children will have had the opportunity to cook a range of nutritious sweet and savoury snacks and meals, prepare and cook vegetables, eggs and meat and have an awareness of foods from around the world as well as local, seasonal produce.

Specific skills identified as critical content and being essential building blocks for each child's progression in their Design and Technology curriculum have been ***highlighted.***

Design Technology **National Curriculum Expectations Year 1**			Year 1		
			Aut	Spr	Sum
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.				
	DT1.1	Design a model car with a given design criteria.			
	DT1.2	Design a Christmas decoration to be sewn.			
	DT1.3	*Use a computing program to design a Christmas decoration.*			
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.				
	DT1.4	*Use a running stitch in plastic with wool.*			
	DT1.5	Make a Christmas decoration using sewing skills.			
	DT1.6	Use a construction kit to make a model car.			
Evaluate	Explore and evaluate a range of existing products.				
	Evaluate their ideas and products against design criteria.				
	DT1.7	Explore and evaluate a range of Christmas decorations.			
	DT1.8	Evaluate a finished decoration against the original design.			
	DT1.9	Evaluate a range of model cars.			
	DT1.10	*Evaluate a finished car against their original design.*			
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.				
	DT1.11	*Use construction kits to make a product.*			
	DT1.12	Use wheels and axles to make a model car.			
	DT1.13	Name parts of a model-chassis, wheel and axle			
Cooking and	Use the basic principles of a healthy and varied diet to prepare dishes.				

nutrition	Understand where food comes from.				
	DT1.14	*Name where simple food comes from-fruit and vegetables.*			
	DT1.15	*Understand the basic principles of a healthy and varied diet.*			
	DT1.16	*Work safely and hygienically.*			
	DT1.17	*Make banana and oat cookies- mix with a wooden spoon and mashing with a fork.*			
	DT1.18	*Make an individual strawberry cheesecake- crush, cut with a normal knife and mix with a wooden dessert spoon.*			

Design Technology **National Curriculum Expectations Year 2**			Year 2		
			Aut	Spr	Sum
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.				
	DT2.1	Design a stocking with a given design criteria.			
	DT2.2	Draw and create a template/mock up of a stocking.			
	DT2.3	*Design a seaside structure with a given design criteria.*			
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.				
	DT2.4	Effectively use a range of tools and equipment to make a stocking.			
	DT2.5	*Use a running stitch in material using thread in pre-punched holes.*			
	DT2.6	Effectively use a range of tools, materials, components and equipment to make a lighthouse.			
Evaluate	Explore and evaluate a range of existing products				
	Evaluate their ideas and products against design criteria				
	DT2.7	*Evaluate a range of stockings.*			
	DT2.8	Evaluate their stocking against the original design criteria.			
	DT2.9	Evaluate a range of seaside structures.			
	DT2.10	Evaluate their seaside structure against the original 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.				
	DT2.11	*Communicate ideas through labelled sketches showing details.*			
	DT2.12	*Make simple pop ups with moving parts, including levers and sliders.*			
	DT2.13	*Explore and discuss how structures can be made stronger, stiffer and more stable.*			

Cooking and nutrition	Use the basic principles of a healthy and varied diet to prepare dishes.				
	Understand where food comes from.				
	DT2.14	*Mix and prepare simple cooked and uncooked foods involving a range of choices.*			
	DT2.15	*Understand where dairy products come from.*			
	DT2.16	Follow a recipe to make a healthy "Fun on the Farm' wrap- mix, grate, spread, cut, slice.			
	DT2.17	*To make a healthy sandwich, choosing from a range of cooked and uncooked fillings. Mix, grate, spread, cut, slice.*			

Design Technology **National Curriculum Expectations Year 3**			Year 3		
			Aut	Spr	Sum
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.				
	DT3.1	Research a range of bridge structures to create ideas for a design criteria.			
	DT3.2	*Develop design criteria for a bridge that is innovative, functional and appealing.*			
	DT3.3	*Design a bridge using cross sectional diagrams.*			
	DT3.4	*Create a prototype of a bridge using paper.*			
	DT3.5	*Use computer-aided design (Tinkercad) to make a simple bridge following a set of given instructions.*			
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.				
	DT3.6	Effectively use a range of tools and equipment to make a bridge.			
	DT3.7	Select suitable materials and components to make a bridge.			
	DT3.8	Select materials and components that follow the aesthetic qualities of the place mat or dream catcher design.			
	DT3.9	Effectively use a range of tools and equipment to make a piece of weaving.			
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.				
	DT3.10	Evaluate a range of different model bridges.			
	DT3.11	*Research and understand the key functions of famous bridges around the world.*			
	DT3.12	Evaluate their bridge against the design criteria and discuss how it could be improved.			
	DT3.13	Evaluate a range of different weaving styles and use to select ideas for own design.			
	DT3.14	Evaluate their weaving against the design criteria.			
Technical	Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.				

knowledge	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.				
	DT3.15	*Investigate how structures can fail when loaded.*			
	DT3.16	*Understand bridges are strengthened to reinforce them.*			
	DT3.17	Apply this understanding to create a bridge which can withhold a weight.			
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.				
	DT3.18	*Measure and weigh ingredients with some support.*			
	DT3.19	*Understand seasonality and select from seasonal and local produce to create a pizza topping.*			
	DT3.20	*Follow a recipe to make a pizza, selecting own pizza toppings- knead, blend, mix, shape, cut (bridge or claw technique) using a sharp knife, slice and spread.*			
	DT3.21	*Follow a recipe to make a quiche with a pastry crust- sieve, grate, dice, rub, knead, snip, cut, crack, beat, roll, pour, cut, divide, garnish and grease.*			

Design Technology **National Curriculum Expectations Year 4**			Year 4		
			Aut	Spr	Sum
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.				
	DT4.1	Create design criteria for a material puppet that is innovative, functional and appealing.			
	DT4.2	Use computer-aided design (Tinkercad) to make a simple face which will then be used for their puppet.			
	DT4.3	*Generate pattern pieces to make a hand puppet.*			
	DT4.4	*Design an electrical system using a cross-sectional and exploded diagram.*			
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.				
	DT4.5	Effectively use a range of tools and equipment to make puppet.			
	DT4.6	Select suitable materials and components to make a puppet.			
	DT4.7	Select materials and components that follow the aesthetic qualities of the puppet design.			
	DT4.8	Use different but appropriate ways to join materials in textiles work e.g. glue, pins, sewing.			
	DT4.9	*Sew a button on to a piece of material.*			
	DT4.10	*Make a model using electrical systems.(eg switches, bulbs, buzzers and motors)*			
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.				
	DT4.11	Evaluate a range of different puppets and their properties.			
	DT4.12	*Evaluate their puppet against the design criteria.*			
	DT4.13	Research key designers of puppets in history.			
	DT4.14	Evaluate own electrical system and those of peers.			
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.				
	DT4.15	*Understand how electrical systems work and can be used in everyday objects.*			
	DT4.16	Apply knowledge of circuits in Science to use electrical systems in a product.			
	DT4.17	Build a product around the understanding of how an electrical system can be used within it.			
	DT4.18	Use vocabulary related to electrical systems whilst making and evaluating 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.				
	DT4.19	*Measure and weigh ingredients with minimal support.*			
	DT4.20	*Discuss where ingredients are grown, reared, caught and processed.*			
	DT4.21	*Discuss health and safety regarding the preparation of raw and cooked foods, e.g. different coloured chopping boards.*			
	DT4.22	*Follow a recipe to make bread rolls- knead, preheat, grease, sprinkle, divide, prove, sprinkle.*			
	DT4.23	*Follow a recipe to make Spicy tomato and lentil soup- peel, chop, dice, rinse, measure, boil, simmer, soften.*			

Design Technology **National Curriculum Expectations Year 5**			Year 5		
			Aut	Spr	Sum
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.				
	DT5.1	*Research and develop design criteria for a pencil case /bag with a zip that is appealing and fit for purpose.*			
	DT5.2	*Design a pencil case/bag with a zip using annotated sketches.*			
	DT5.3	*Make a prototype of a pencil case / bag with a zip.*			
	DT5.4	Generate pattern pieces to make a pencil case / bag with a zip.			
	DT5.5	*Use and exploded diagram and computer-aided design (Tinkercad) to design a mechanical system from a range of criteria.*			
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.				
	DT5.6	Make a bag/pencil case using a wide range of tools and equipment.			
	DT5.7	Select suitable materials and components, including a zip, that follow the aesthetic qualities of the bag / pencil case design.			
	DT5.8	*Use different but appropriate ways to join materials in textiles work- back stitch and adding a zip.*			
	DT5.9	*Make and use a product that includes mechanical systems.*			
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.				
	DT5.10	Evaluate a range of different bags/pencil cases and their properties.			
	DT5.11	Evaluate their bag/pencil case against the design criteria.			
	DT5.12	Evaluate own mechanical system and those of peers.			
Technical	Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.				

knowledge	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.				
	DT5.13	Understand how mechanical systems work and can be used in everyday objects.			
	DT5.14	*Understand the purpose of gears, pulleys, cams, levers and linkages in mechanical products.*			
	DT5.15	*Build a product around the understanding of how a mechanical system can be used to make it move.*			
	DT5.16	Use vocabulary related to mechanical systems whilst making and evaluating 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.				
	DT5.17	*Weigh and measure accurately and independently.*			
	DT5.18	*Begin to select appropriate tools from a range of equipment.*			
	DT5.19	*Understand and use seasonal products*			
	DT5.20	*Make a tomato pasta meal- cook turkey mince, crush, grate, slice, simmer, chop, fry, heat, brown, blend*			
	DT5.21	*Make a tuna pasta salad- boil, drain, cool, tin opener, mix, pour, chop, dice, tear.*			

Design Technology National Curriculum Expectations Year 6			**Year 6**		
			Aut	Spr	Sum
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.				
	DT6.1	Research and develop design criteria for a knitted product.			
	DT6.2	*Design a moving model using annotated sketches, cross-sectional, exploded diagrams and computer-aided design (redfern electronics).*			
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.				
	DT6.3	Make a moving model using construction materials that is controlled by a computer.			
	DT6.4	Select materials and components that follow the aesthetic qualities of the design for a knitted product.			
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.				
	DT6.5	Investigate and evaluate a number of knitted products that could be used for differing purposes.			
	DT6.6	Evaluate their knitted product against the design criteria.			
	DT6.7	Research individuals who have designed moving models using technology and how this has impacted on lives.			
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.				
	DT6.8	*Understand how computers can be used to control everyday objects.*			
	DT6.9	*Understand the purpose of why computers are used to program everyday objects.*			
	DT6.10	*Understand how computers can be used to monitor everyday objects.*			

	DT6.11	*Build a product which relies upon using a computer to program a product to monitor or control.*			
	DT6.12	Use vocabulary related to programming, monitoring and controlling 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.				
	DT6.13	*Weigh and measure accurately and independently.*			
	DT6.14	*Select most appropriate tools and equipment to make each dish.*			
	DT6.15	*Understand and know where and how food is reared, caught and processed.(meat)*			
	DT6.16	*Apply health and safety knowledge regarding the preparation of raw and cooked foods to safely prepare and cook their meal.*			
	DT6.17	*Follow a recipe to make cottage pie- peel, boil, mash, fry, cut, boil, drain, brown, pour, simmer, season, spoon, spread, grill.*			
	DT6.18	*Follow a recipe to make chickpea and vegetable curry- chop, peel, crush, measure, drain, rinse, simmer, season, fry, coat, use a tin opener.*			