Design and Technology Progression of Skills and Knowledge

DT is a cross curricular subject – plan teaching and learning around other subjects (e.g. understanding and using electrical systems in KS2 should be taught alongside teaching of electricity in science.)



Level Expected at the End of EYFS

Early Learning Goals that link most closely to the Design and Technology National Curriculum.

Expressive Arts and Design (Exploring and Using Media and Materials)

Children safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.

Expressive Arts and Design (Being Imaginative)

Children use what they have learnt about media and materials in original ways, thinking about uses and purposes. They represent their own ideas, thoughts and feelings through design and technology, art, music, dance, role play and stories.

Pupils should be taught to:

Technical Knowledge

Pupils should be taught to:

Cooking and Nutrition

Pupils should be taught to:

• understand where food comes from.

Evaluate

Physical Development (Moving and Handling)

Children handle equipment and tools effectively, including pencils for writing.

Key Stage 1 National Curriculum Expectations

Design

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.

Make

Pupils should be taught to:

- 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.

Key Stage 2 National Curriculum Expectations

Design

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, crosssectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.

Make

Pupils should be taught to:

- 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

Pupils should be taught to:

investigate and analyse a range of existing products;

• explore and evaluate a range of existing products;

• evaluate their ideas and products against design criteria.

• evaluate their ideas and products against their own design criteria and consider the views of others to improve their work;

• use the basic principles of a healthy and varied diet to prepare dishes;

• understand how key events and individuals in design and technology have helped shape the world.

Technical Knowledge

Pupils should be taught to:

- 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

Pupils should be taught to:

- 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.

Progression of	Skills - Design (including)	developing, planning and co	ommunicating ideas)			
	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5

Crossflatts PRIMARY SCHOOL

• 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.

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Year 6

Links to the National Curriculum 2014	N/A	 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. 	 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. 				
Key Learning	 I know what a design is. I know why it is important to create a design before you start making something. 	 I understand that products are created for a specific person to serve a specific purpose. I suggest ideas and know things about common products. I use pictures, words, templates and simple mock ups to show what I want to do. 	 I understand that products are created for a specific person to serve a specific purpose and that those products should also be innovative, appealing and fit for purpose. I generate ideas by collecting and using various sources of information. I use my understanding of the characteristics of familiar products when developing my own ideas. I share and communicates ideas using discussion, labelled sketches, models and templates. I cost products and think about making them sustainable and innovative. I think of ideas and plan what to do next, based on my experience of working with materials and components. 				
Vocabulary	Design, create, think, explain, make, improve	As EYFS plus evaluate, product, design criteria, strength, weakness, name, describe, user, use, report, measure, list, illustrate, label, recognise, tell,	As KS1 plus apply skills, solve problems, explain methods, modify, predict, interpret, summarise, make observations, estimate, compare.	As lower KS2 plus evaluate, solve non-routine problems, appraise, explain concepts, hypothesis, investigate, cite evidence, prove			
Evidence of expected standard	 Explain what they are making and which materials they are using. Select and name the appropriate tools needed to work the materials e.g. scissors for paper. Discuss their work as it progresses. 	 Understand the development of existing products: what they are for, how they work, materials used. Start to suggest ideas and explain what they are going to do. Develop their ideas through talk, drawings observation, modelling. and labelling parts. Make templates and mock ups of their ideas in card and paper. As year 1. Identify a purpose for what they intend to design and make. Select appropriate materials for their product and explain why they have chosen them. Make templates and mock ups of their ideas in card and paper. 	 As year 2. Start to order the main stages of making a product. Know to make drawings with labels when designing. Explain their choice of materials and components including function and aesthetics. As year 3. Develop a clear idea of planning, how to use materials, equipment and processes. Suggest alternative methods of making, if the first attempts fail. Begin to identify the strengths and areas for development in their ideas and products. 	 develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose. Use results of order of their work, choosing appropriate materials, tools and techniques. Identify the strengths and areas for development in their 			
Examples of evidence of exceeding standard	 Explain why they have chosen certain materials. Make relevant modifications to their work as progresses. 	 Compare their design to an existing product and talk about any shared strengths/ possible weakness in their own design in comparison. Explain how their design solves a problem or purpose for a particular problem or person. 	 Annotate design with clear explanations and accurate, detailed labels. Develop an idea and refine the design during the design process. Asks for and accepts advise for revisions. 	 Explain how and why the results of investigation and research have influenced their design. Identify the limitations of their design and explain how these might be overcome. 			

Progression of Skills - Make (working with tools, equipment, materials and components to make quality products)											
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6					
Links to the N/A National Curriculum 2014		der range of tools and ractical tasks [for example, and finishing], accurately;	shaping, joining and finselect from and use a w		components, including constru	sks [for example, cutting, uction materials, textiles and					

5	Year 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. 							
Key Learning	 I talk about what I am making and which tools I use. I use tools and materials effectively, sometimes with help. 	and explain why I choseI use tools and equipment	 I choose suitable tools, techniques and materials, and explain why I chose them. I use tools and equipment with some accuracy to cut and shape materials and to put together components. I use tools and to put together I work from my own detailed plans, modifying them where appropriate. I check my work as it develops and modify my approach if required. 						
Vocabulary	Design, create, think, explain, make, improve	As EYFS plus evaluate, produ strength, weakness, name, d measure, list, illustrate, labo	escribe, user, use, report,	As KS1 plus apply skills, solv methods, modify, predict, in observations, estimate, com	terpret, summarise, make	As lower KS2 plus evaluate, appraise, explain concepts, h evidence, prove			
Evidence of expected standard	 Begin to create their design using basic techniques. Start to build structures, joining components together. Use adhesives to join material. 	 Begin to make their design using appropriate techniques. Build structures, exploring how they can be made stronger, stiffer and more stable. With help measure, mark out, cut and shape a range of materials. Begin to use simple finishing techniques to improve the appearance of their product. 	 As year 1. Begin to select tools and materials; use correct vocabulary to name and describe them. With help measure, cut and score with some accuracy. Learn to use hand tools safely and appropriately. Start to choose and use appropriate finishing techniques based on own ideas. 	 As year 2. Select a wider range of tools and techniques for making their product i.e. mechanical components and electrical components. Explain their choice of tools and equipment in relation to the skills and techniques they will be using. Measure, mark out, cut, score and assemble components with more accuracy. 	 As year 3. Select a wider range of tools and techniques for making their product safely. Start to join and combine materials and components accurately in temporary and permanent ways. Independently work safely and accurately with a range of simple tools. 	 As year 4. Select appropriate materials, tools and techniques e.g. cutting, shaping, joining and finishing, accurately. Select from and use a wider range of materials and components according to their functional properties and aesthetic qualities. Begin to measure and mark out more accurately. 	 As year 5. Independently use tools safely and accurately. Make modifications as they go along. Construct products using permanent joining techniques. Measure and mark out accurately. 		
Examples of evidence of exceeding standard	• Use a range of joining techniques (e.g. tap, split pints, tabs, hinges, string) with reasonable precision and accuracy.	• Explain and demonstrate two or more techniques to make a structure stronger, stiffer and or more stable.	• Independently measure, cut and score with some accuracy	 Independently measures, marks out, cuts, scores and assembles components with complete accuracy. 	• Independently joins materials and components accurately and paying attention to aesthetics and detail.	• Independently makes a product from start to finish (selects own tools, materials etc.) with reasonable precision and accuracy.	• Independently makes a product from start to finish (making modification on the way) with complete precision and accuracy.		

Progression of Skills	Progression of Skills – Evaluate (processes and products)									
EYH	?S	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6			
Links to the N/A National Curriculum 2014	A	 Pupils should be taught to: explore and evaluate a ran evaluate their ideas and p criteria. 	e	 evaluate their ideas and p their work; 	range of existing products; products against their own de its and individuals in design a	-	-			

Key Learning	 I know what a design is. I know why is important to create a design before you start making something. 	 I understand that products person to serve a specific p I recognise what I have do suggest things that I could 	ourpose. ne well whilst making and	 I can test my products to ensure their suitability according to the design criteria. I evaluate how effectively I have used information sources, using the results of my research judgements when designing and making. I evaluate my products, and identify ways of improving them. I can identify where evaluation has led to improvements. 			search to inform my	
Vocabulary	Design, create, think, explain, make, improve	As EYFS plus evaluate, produ strength, weakness, name, d measure, list, illustrate, labe	lescribe, user, use, report,	methods, modify, predict, interpret, summarise, make			As lower KS2 plus evaluate, solve non-routine problems, appraise, explain concepts, hypothesis, investigate, cite evidence, prove	
Evidence of expected standard	 Say what they like and do not like about items they have made and attempt to say why. Begin to talk about their designs as they develop and identify good and bad points. 	 Start to evaluate their product by discussing how well it works in relation to the purpose (design criteria). Begin to evaluate their products as they are developed, identifying strengths and possible changes they might make. 	 As year 1. With confidence talk about their ideas and the ideas of others, in terms of strengths and weaknesses. 	 Evaluate familiar products and consider the views of others to improve them. Evaluate the key designs of individuals in design and technology which has helped shape the world. Start to evaluate their product against original design criteria e.g. how well it meets its intended purpose and against other existing products. 	 As year 3. .Evaluate existing products and their products by carrying out appropriate tests. 	 As year 4. Make comment on the designs of their peers and listen to and reflect upon the comments of peers about their own work. Evaluate their work both during and at the end of the assignment. Use evaluations made during an assignment to make amendments to a design. 	 As year 5. Record their evaluations using drawings with labels. 	
Examples of evidence of exceeding standard	 Say how they would improve a design next time. Make an improved product based on their observations. 	•Evolve and modify their design and/or product based on the strengths/ weaknesses they have identified.	• Make predictions about how the strengths/ weaknesses of a product might impact its purpose and suitability	• Compare similar products and make observations based on their strengths and weaknesses.	 Predict and estimate what the results of tests will be. Compare their product to other familiar products based on testing. 	 Form hypothesis. Develop and design their own tests for products to ensure that they meet the design criteria. 	• Cite evidence from results of tests when evaluation a product.	

Progression of		knowledge – Textiles					
	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Links to the National Curriculum 2014	N/A			ng, shaping, joining and f select from and use a ingredients, according	wider range of tools and inishing], accurately; wider range of material		actical tasks [for example, cutting, ng construction materials, textiles and ries.

Key Learning	 I know what fabric is. I can use fabric in play. I can thread beads onto wide string or pipe cleaners. 	 I can design and make a fat I can select fabrics accordi I can cut fabric accurately. I can use appropriate joinit techniques. 	ng to their properties.	 I can design and make a fu I can create an accurate pa I can measure and cut faba I can use appropriate sewate I can follow cutting lines a 	rototype and pattern. ric accurately. ing techniques.	ile product for a specific pur	e product for a specific purpose.		
Vocabulary	Fabric, thread, string, ribbon	As EYFS plus lace, hessian, c annotate, criteria, tools, des join, sew, cross-stitch, explo attach, cut, product, seam, p properties, computer, needle	ign, template, glue, staple, ore, textiles, evaluate, orogram, pin, skill,	evaluate, user, technique, hem, join, shell structure, shape, stitch, template, decorate, functional, aesthetic cutting		blanket stitch, scale, specifi	s Lower KS1 plus millimetre, prototype, fastening, anket stitch, scale, specification design process, atting line, accurately, sewing line, measurements, eam allowance,		
Evidence of expected standard	 Show an awareness of the qualities of fabrics (e.g. a silky fabric might work well in role-play as water). Use fabrics in play, role play, dance, drama etc. Thread beads. 	 Colour fabrics using a range of techniques e.g. fabric paints, printing, painting. Cut out shapes which have been created by drawing round a template onto the fabric. Join fabrics using glue. 	 As year 1. Join fabrics by using running stitch, glue, staples ,over sewing and tape. Decorate fabrics with buttons, beads, sequins, braids, ribbons 	 As year 2. Understand the need for patterns. Create a simple pattern. 	 As year 3. Use appropriate decoration techniques e.g. appliqué (glued or simple stitches). Understand seam allowance. Join fabrics using running stitch, over sewing, back stitch. 	 As year 4. Understand pattern layout. Prototype a product using J cloths or paper. Pin and tack fabric pieces together. 	 As year 5. Decorate textiles appropriately. Explore fastenings and recreate some e.g. sew on buttons and make loops. Join fabrics machine stitching. 		
Examples of evidence of exceeding standard	• Use fabrics in exciting and imaginative ways e.g. attempt to make a dress for a doll or use fabric scraps in a collage.	 Make a clear choice about which material(s) would be best to use in a design and suggest alternatives. Explain which technique is best in different situations. 	 Use a neat, uniform running stitch and/or other joining technique. Decorate using buttons, beads, sequins, braids and ribbons with precision and finesse. 	• Create an accurate pattern.	 Decorate using applique and stitching with precision and finesse. Use seam allowance and appropriate stitching to join fabrics with precision and care. 	 Evaluate and make modifications to the original design after evaluating the prototype Use techniques accurately and with finesse to sew a uniform 3D product. 	 Use a neat, precise fastening. Sews a straight, uniform line using a sewing machine. 		

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6		
Links to the National Curriculum 2014	N/A	stronger, stiffeexplore and us	aught to: s, exploring how they can be made r and more stable; e mechanisms [for example, levers, and axles], in their products.	 Pupils should be taught to: apply their understanding of how to strengthen, stiffen and reinforce more complex struct understand and use mechanical systems in their products [for example, gears, pulleys, can linkages]; understand and use electrical systems in their products [for example, series circuits incorp bulbs, buzzers and motors]; apply their understanding of computing to program, monitor and control their products. 					
 • I can create 3D junk models using simple joining techniques. • I can design and make a product which has two m mechanisms [for example, levers, sliders, wheels axles]. 									

	• I can build stable structures using construction bricks etc.	 I can select from and use a equipment to perform prace I can build structures, expl stronger, stiffer and more 	ctical tasks. loring how they can be made	linkages];I understand and can use switches, bulbs, buzzers a	electrical systems in their pr and motors];	oducts [for example, gears, p oducts [for example, series ci n, monitor and control my pro	ircui
Vocabulary	Paper, card, box, tube, cut, stick, tape, glue, scissors, hole punch, split pin, hole, bricks, construct	As EYFS plus tools, equipme test, hinge, protect, stronger lever, slider, pivot, split pin assemble, rotary, measure	r, select stiffer, moving,	As KS1 plus, functional, aest input, output, fixed, pivot, a bulb, battery, mains, electri- parallel, switch, lamp, insul circuit, symbol, stiffen, tow test, spars, delta, frame stru	dapt, mechanical system, cal system, series circuit, ator, conductor, component,	As lower KS1 plus support, strengthen, reinforce, struc functional, join, aesthetic, s	cture
Evidence of expected standard	 Create 3D sculptures using junk modelling Use glue, tape, split pins to join paper, card, tubes, boxes etc. Builds simple, stable structures using construction bricks (Lego, wooden blocks, stickle bricks etc.) 	 Fold, tear and cut paper and card. Roll paper to create tubes Cut along lines (straight and curved) Curl paper Use hole punch Create simple sliders and leavers Use a range of materials to create models. Talk about how structures can be made stronger. Join materials appropriately according to materials being joined and situation. 	 Attach wheel to chassis using an axel. Use a range of materials to create models with axels. (tubes, dowels etc.) 	 As year 2. Cut slots. Cut internal shapes. Use lolly sticks/ card to make levers and linkages. Create nets. Prototype frame and shell structures. Make structures more stable (e.g. by giving them a wider base.) Choose materials based on their functional and aesthetic qualities. 	 As year 3. Use linkages to make movements larger or more varied. Measure, mark and cut accurately to 1cm. Create shell or frame structures strengthened with diagonal struts. Incorporate a circuit with a bulb or buzzer into a model. 	 As year 4. Cut slots. Cut accurately and safely to make a marked line. Join and combine materials with temporary, fixed or moving joins. Choose an appropriate sheet material for the purpose. Use a hand drill to drill tight and loose fit holes. Incorporate motor and switch into a model. 	 A U F F T C C T T T S S
Examples of evidence of exceeding standard	 Shows a clear though process and uses precision and finesse when joining materials. Has an awareness of how to make structures more stable. 	• Can make a clear choice about which material(s) would be best to use in a design	• Can explain which technique is best in different situations	• Chooses appropriate materials and can explain why.	 Can make an accurate template. Creates neat, functional links and hinges. 	• Cuts materials with accuracy and precision to refine the finish	• F a j
Progression of	Skills – Technical knowledg	e - Cooking and nutrition					ė.
	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Ye
Links to the National Curriculum 2014	N/A	 Pupils should be taught to: use the basic principles of to prepare dishes; understand where food complexity 	-	• prepare and cook a varie		varied diet; dishes using a range of cookin ariety of ingredients are grow	
Key Learning	 I can prepare a simple snack (fruit or toast) for myself with adult help, safely and hygienically. I can help to prepare a simple meal or bake with adult help. 	 I can prepare a simple cold help, safely and hygienical I understand the difference savoury, healthy and unher I can use simple food prepa I know to wash my hands a fruit and vegetables) before 	ly e between sweet and althy. aration techniques. and ingredients (such as	 I understand that a healthy I understand how to use a kneading and baking. I can follow a recipe indep I know where food comes 	range of techniques such as p endently	ety and balance of different fo beeling, chopping, slicing, gra easons may affect food availab	ating
Vocabulary	Food, cook, bake, stir, spread, knead, clean, diet, measure.	Healthy, diet, sweet, savour cutting, peeling, grating, rec kilogram. ingredients, taste,	cipe, measure, weigh, gram,	As KS1 plus simmer, boil, vit seasoning, seasonality, milli texture, appearance, flavour cooker,	litre, litre, measure, sow,	As lower KS2 plus global, s carbohydrate, recipe, nutr ripe, sustainable, reared, c proportions, griddle, blanc	ition caugl

[for example, gears, pulleys, cams, levers and [for example, series circuits incorporating tor and control my products. wer KS1 plus support, stiffen, sturdy, stable, gthen, reinforce, structure, free standing, tional, join, aesthetic, shape, cut, accuracy • As year 5. vear 4. • Use craft knife, cutting slots. accurately and safely mat and safety ruler nake a marked line. under one to one and combine supervision. terials with • Build frameworks using a porary, fixed or range of materials (wood, ving joins. card, corrugated plastic) ose an appropriate to support mechanisms. • Apply understanding of et material for the how to strengthen and pose. a hand drill to drill stiffen more complex nt and loose fit holes. structures. orporate motor and tch into a model. • Pays close attention to s materials with aracy and precision to aesthetics when creating ne the finish.. joins. Year 6 5 diet; using a range of cooking techniques; of ingredients are grown, reared, caught and enically. balance of different food and drink. chopping, slicing, grating, mixing, spreading, may affect food availability. al foods. ower KS2 plus global, sensory, protein, pohydrate, recipe, nutrition, skills, techniques, fry,

sustainable, reared, caught, processed, protein,

Evidence of expected standard	 Stir, spread, knead and shape a range of food and ingredients. Begin to work safely and hygienically. Start to think about the need for a variety of foods in a diet. Measure and weigh food items using non statutory measures e.g. spoons, cups. etc. Develop a food vocabulary using taste, smell, texture and feel. 	 Start to understand how to name and sort foods into the five groups. Prepare simple dishes safely and hygienically, without using a heat source. Know how to use techniques such as cutting, peeling and grating. Work with an adult to follow a simple recipe. 	 As year 1. Know that everyone should eat at least five portions of fruit and vegetables every day. Measure and weigh food items. Follow a recipe to make food with increasing independence. 	 As year 2. Understand how to prepare and cook a variety of predominantly savory dishes safely and hygienically including, where appropriate, the use of a heat source. Know how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. Independently follow a recipe. 	 As year 3. Know that a healthy diet is made up from a variety and balance of different food and drink. Understand where and how ingredients are grown and captured. 	 As year 4. Know how to prepare and cook a variety of predominantly savory dishes safely and hygienically including, where appropriate, the use of a heat source. Know that different food and drink contain different substances - nutrients, water and fibre - that are needed for health. 	 As year 5. Understand that seasons may affect the food available. Select foods based on their seasonality. Understand how to feed themselves and others affordably now and in the future.
Examples of evidence of exceeding standard	• Prepare a simple snack (fruit or toast) for myself independently, safely and hygienically.	 Prepare a simple cold meal for myself independently, safely and hygienically. Follow a simple recipe independently. 	 Explain why a healthy, balanced meal is so, referencing the five food groups. Measure and weigh food items accurately and independently. 	• Explain when you might use a cooking technique and why this particular technique is preferable.	• Explain how a variety of ingredients are grown, reared, caught and processed.	• Research and develop their own savoury recipe.	 Research and make a balanced, seasonal recipe and work out the cost per head.