DT Pupil Progression Plan

Three areas of disciplinary and substantive knowledge which underpin the primary DT curriculum
These materials are designed to inform how we plan for children to improve year by year and assess how well they are improving.

EYFS Exploring Arts and Design Expectations	Key Stage 1 National Curriculum Expectations	Key Stage 2 National Curriculum Expectations
Children will be learning to: • Explore different materials, using all their senses to investigate them. Manipulate and play with different materials. • Use their imagination as they consider what they can do with different materials. • Make simple models which express their ideas. • Explore different materials freely, to develop their ideas about how to use them and what to make. • Develop their own ideas and then describe which materials to use to express them. • Join different materials and explore different textures. • Return to and build on their previous learning , refining ideas and developing their ability to represent them. • Create collaboratively, sharing ideas, resources and skills. • Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. • Share their creations, explaining the process they have used. These objectives have been taken from Development Matters documents from the following strands. • Physical Development • Expressive Arts and Design • Understanding the world	Pupils should be taught: 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 in their products.	Pupils should be taught: 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.
The national curriculum for DT aims to ensure that all pupils by the end of year 6: • 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.		

Structures

	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
Design	Explore different materials freely, using all their senses and ideas to investigate how to use them and what to make. Manipulate and play with different materials	Learn the importance of a clear design criteria. Include individual preferences and requirements in their design.		Design a desk tidy with key features to appeal to a specific purpose. Draw and label a desk tidy design using 2D shapes that will create the features - materials, need and colours.		Design a stable structure that is able to support weight. Create a frame structure with a focus on triangulation.	Design a playground featuring a variety of different structures, giving careful consideration to how the structures will be used.

	Use their imagination as they consider what they can do with different materials and ideas. Begin to show accuracy and care when drawing.						
Make	Make simple models which express their ideas. Use one-handed tools and equipment, for example, making snips in paper with scissors.	Make a stable structure from card, tape and glue. Create joints and structures from paper, card and tape/glue.		Create special features for individual designs. Make facades from a range of recycled materials. Construct a range of 3D geometric shapes using nets.		Independently measure and mark wood/card accurately. Select appropriate tools and equipment for particular tasks. Use the correct techniques to saw safely.	Build a range of play apparatus structures drawing upon new and prior knowledge of structures. Measure, mark and cut wood to create a range of structures. Use a range of materials to reinforce and decorate structures.

Evaluation	Return to and build on their previous learning, refining ideas and developing their ability to represent them. Share their creations, explaining the process they have used.	Evaluate a chair according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't. Suggest points for improvements		Evaluate their own work and the work of others based on the aesthetic of their product based on the original design, Suggest points for modification.		Adapt and improve own structure by identifying points of weakness and reinforce them as necessary. Suggest points for improvements for own structure and those designed by others.	Improve a design plan based on peer evaluation. Test and adapt a design to improve it as it is developed.
Technical knowledge	Join different materials and explore different textures. Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.	Identify when a structure is more stable then another. Know that shapes and structures with wide flat bases or legs are the most stable. Use the vocabulary strength, stiffness and stability. Build a strong and stiff structure by folding card.		Identify features of a desk tidy. Identify suitable materials to be used for a desk tidy, considering weight , compression and tension. Understand the differences between frame and shell structure.		Explore how to create a strong beam Identify strong and weak structures. Find different ways to reinforce structures. Understand how triangles can be used to reinforce structures.	Know that structures can be strengthened by manipulating materials and shapes. Identify shell structures in everyday life (cars, aeroplanes, tin cans).

Textiles							
	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design	Explore different materials freely, using all their senses and ideas to investigate how to use them and what to make. Manipulate and play with different materials Use their imagination as they consider what they can do with different materials and ideas. Begin to show accuracy and care when drawing.	Use a template to create a superhero cape.	Design and create a fabric holder to keep Jack's beans safe.	Design and make a pencil case and apply individual design criteria.		Design a 3D poppy considering the main component shapes required and create an appropriate template.	Design a 3D toy considering the main component shapes required and create an appropriate template.

Make	Make simple models which express their ideas. Use one-handed tools and equipment, for example, making snips in paper with scissors.	Cut fabric neatly with scissors. Use joining methods to decorate a superhero cape.	Select and cut fabrics for sewing. Decorate a fabric beans holder by using glue or running stitch.	Follow a design criteria to create a xxxxx. Select and cut fabrics with ease using fabric scissors. Sew cross stitch to join fabrics. Decorate fabrics using applique.		Create a 3D stuffed poppy from a 2D design. Measure, mark and cut fabric independently. Create a strong and secure stitch when joining fabric. Use applique to attach pieces of fabric decoration.	Create a 3D stuffed toy from a 2D design. Measure, mark and cut fabric independently. Create a strong and secure blanket stitch when joining fabric. Use applique to attach pieces of fabric decoration.
Evaluate	Return to and build on their previous learning, refining ideas and developing their ability to represent them. Share their creations, explaining the process they have used.	Reflect on a finished product explaining likes and dislikes.	Evaluate the quality of the stitching on others' work. Identify aspects of their peers' work that they particularly like and why.	Evaluate an end product and think of other ways in which to create similar items.		Test and evaluate an end product and give points for further improvements.	Test and evaluate an end product and give points for further improvements.
<u>Technical Knowledge</u>	Join different materials and explore different textures.	Learn different ways in which to join fabrics together (pinning ,	Join parts using fabric glue or stitching.	Thread needles with greater independence.		Learn to sew blanket stitch to join fabric.	Learn to applique to join various layers of fabric.

	Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.	stapling and glueing).	Thread a needle. Sew running stitch with evenly spaced , neat even stitches to join fabric. Neatly pin and cut fabric using a template.	Tie knots with greater independence. Sew cross stitch and applique. Understand that fabrics can be layered for effect.		Thread needles independently.	Thread needles and knot thread independently.

Food and Nutrition							
	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design		Design a healthy fruit smoothie based on food combinations which works well together.	Design a healthy wrap based on a food combination which works well together.	Create a healthy and nutritious recipe for a savoury pizza using seasonal ingredients.	Design a biscuit with a given budget, drawing upon previous taste testing.	Adapt a traditional recipe understanding that the nutritional value of a recipe alters if you remove or add additional ingredients.	
Make	Use a range of small tools, including scissors, paintbrushes and cutlery.	Chop fruit and vegetables safely to make a smoothie. Identify if a food is a fruit or a vegetable.	Slice food safely using the bridge or claw grip. Construct a wrap that meets a design brief.	Know how to prepare themselves and a workspace to cook safely in, learning the basic rules to avoid food contamination. Follow the instructions within a recipe.	Follow a baking recipe. Cook safely, following basic hygiene rules.	Cut and prepare vegetables safely. Use equipment safely, including knives and hot pans. Know how to avoid cross contamination.	

		Learn where and how fruits and vegetables grow.			Adapt a recipe		
Evaluate	Make healthy choices about food, drink, activity and toothbrushing. Know and talk about the different factors that support their overall health and wellbeing: - healthy eating	Test and evaluate different food combinations. Describe appearance, taste and smell.	Describe the taste, texture and smell of fruit and vegetables. Taste testing different food combinations and final products. Evaluate which grip was most effective.	Establish and use design criteria to help test and review dishes. Describe the benefits of seasonal vegetables and the impact on the environment. Suggest points for improvement when making a seasonal pizza.	Evaluate a recipe considering taste, texture, smell and appearance. Evaluate and compare a range of products. Suggest modifications.	Identify the nutritional differences between different products and recipes. Identify and describe healthy benefits of food groups.	
Technical Knowledge	Use a range of small tools, including scissors, paintbrushes and cutlery.	Understand the difference between fruits and vegetables. Describe and group fruits by texture and taste.	Understand what makes a balanced diet. Know where to find the nutritional information on packaging. Know the five food groups.	Learn that climate affects food growth, Work with cooking equipment safely and hygienically. Learn that fruit and vegetables grow in certain seasons. Learn to use, store and clean a knife safely,	Understand the impact of the cost and the importance of budgeting when planning ingredients. Understand the environmental impact on future products.	Learn how to research a recipe. Understand what constitutes a balanced diet. Learn to adapt a recipe to make it healthier.	

Mechanisms							
	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design	Use their imagination as they consider what they can do with different materials and ideas.		Select appropriate materials based on their properties. Design a vehicle that includes wheels, axles and axle holders which will allow the wheels to move.		Personalise a moving monster design. Choose shapes that increase or decrease speed as a result of air resistance.		Design and make a cam toy. Understand how linkages change the direction of a force.
Make	Make simple models which express their ideas.		Make linkages using card for levers and split pins for pivots. Cut and assemble components neatly. Select materials according to their characteristics. Follow a design brief.		Measure, mark, cut and assemble with increasing accuracy. Make a model based on a chosen design.		Measure, mark and cut parts accurately using scissors and a ruler. Assemble components accurately to make a stable frame. Ensure that joints of a frame are secured at right angles.
Evaluate	Return to and build on their previous learning, refining ideas and developing their		Evaluate own design against design criteria.		Evaluate the speed of a final product based on the effect of shape on speed		Evaluate the work of others and receive feedback on their own work.

	ability to represent them. Share their creations, explaining the process they have used.		Use peer feedback to modify a final design.		and the accuracy of workmanship.		Describe changes they would make/do if they were to do the project again.
Technical Knowledge	Join different materials and explore different textures. Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.		Learn that mechanisms are a collection of moving parts. Learn that there is an input and an output in a mechanism. Learn that a lever is something that turns a pivot. Learn how axels help wheels to move a vehicle		Learn that all moving things have kinetic energy. Learn that products change and evolve over time.		Use a bench hook to saw safely and effectively. Explore cams, learning that different shaped cams can produce different follower movements. Explore types of motions and direction of motion.

Electrical Systems						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design				Design a torch giving consideration to the target audience. Create both design and success criteria focussing on features		Design a steady hand game - identifying and naming the components required.

				of individual design ideas.		Draw a design from different perspectives.
Make				Make a torch with a working electrical circuit and switch. Use appropriate equipment to cut and attach materials. Assemble a torch according to the design and success criteria.		Make electromagnetic motors and tweak the motor to improve its function. Construct a stable base for an electromagnetic game. Make and test a circuit. Incorporate a circuit into a base.
Evaluate				Test and evaluate the success of a final product and take inspiration from the work of peers.		Test own and others finished games, identifying what went well and make suggestions for improvement.
Technical Knowledge				Learn that they must apply their scientific understanding of electrical circuits to create a fully functioning torch.		Learn that a functional electrical product will only work with a complete operational circuit. Learn to incorporate a switch into an electrical circuit confidently.

				Learn that a number of components can be used in a circuit.		