Design & Technology - Whole School Progression Map

Discovery MAT – Design & Technology Curriculum Statement

Quote that guide us:
'Good buildings come from good people, and all problems are solved by good design.' Stephen Gardiner (British Architect)
'High-quality design and technology education makes an essential contribution to the creativity, culture, wealth, and well-being of the nation.' National Curriculum.

Why is it important to teach Design & Technology? (Intent)
Design and Technology is an inspiring, rigorous and practical subject. D&T should provide children with a real-life and relevant context for learning. As a STEM trust, we encourage children to use their inquiry, observation, creativity, problem-solving, flexibility, and collaboration skills to design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants, and values. Through the D&T curriculum, children should be inspired by engineers, designers, chefs, and architects to enable them to create a range of structures, mechanisms, textiles, electrical systems, and food products with a real-life purpose.

Key Concepts:
- Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values.
- They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing, and art.
- Pupils learn how to take risks, becoming resourceful, innovative, enterprising, and capable citizens.
- Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world.

Curriculum Design (Implementation)
Our D&T curriculum provides a clear and comprehensive document that will show progression of skills and vocabulary across all key stages within the strands of D&T. All teaching of D&T follows the design, make, and evaluate cycle. Each stage is rooted in technical knowledge. The design process is rooted in real-life, relevant context and linked with our topic to ensure meaning and purpose to the learning. While making, children are provided with choice of a range of tools to choose freely from. To evaluate, children evaluate their finished products against a design criterion. Each of these stages are given equal weight.

In KS1 this looks like:
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

In KS2 this looks like:
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

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- 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

Knowledge Focused

To ensure clear sequences of learning, key skills and key knowledge for D&T have been mapped across the Discovery MAT wide progression document, which is used to plan sequences of lessons. These give small steps that build towards key end points that link to the National Curriculum. These break down the National Curriculum statements into smaller steps. Key vocabulary is identified for each year group.

What we do well as a Trust (Impact)

As a MAT, we aim to create an inquisitive learning environment within our classrooms and reinforce the understanding that they are a supportive place to plan, implement and adapt ideas and learn. The study of D&T across the MAT allows our pupils to safely experience the wide range of skills and knowledge encompassed by this practical subject. All the D&T sequences have been planned and designed carefully to ensure they correlate with themes of learning and often have many cross-curricular links, particularly with History, Geography and Science. As well as each sequence of lessons being purposeful, we ensure they are relevant and modern in many ways. Our key STEM skills run through every aspect of D&T: inquiry, observation, creativity, problem-solving and collaboration. Therefore, we encourage children to become independent, reflective, creative critical thinkers, both as individuals and part of a team.

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Design & Technology Curriulum & EYFS Framework		
EYFS	**KS1**	**KS2**
Nursery: • Use one-handed tools and equipment, for example, making snips in paper with scissors. (PD) • Select shapes appropriately: flat surfaces for building, a triangular prism for a roof etc. (M) • Combine shapes to make new ones – an arch, a bigger triangle etc. (M) • Use all their senses in hands-on exploration of natural materials. (UW) • Make imaginative and complex 'small worlds' with blocks and construction kits, such as a city with different buildings and a park. (EAD) • Explore different materials freely, to develop their ideas about how to use them and what to make. (EAD) • Develop their own ideas and then decide which materials to use to express them. (EAD) • Join different materials and explore different textures. (EAD) • Make healthy choices about food, drink, activity and toothbrushing. (PSED) **Foundation:** • Return to and build on their previous learning, refining ideas and developing their ability to represent them. (EAD) • Create collaboratively, sharing ideas, resources and skills. (EAD)	Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment]. When designing and making, pupils should be taught to: **Design** • design purposeful, functional, appealing products for themselves and other users based on design criteria • generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology **Make** • select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] • select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics **Evaluate** • explore and evaluate a range of existing products • evaluate their ideas and products against design criteria	Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment]. When designing and making, pupils should be taught to: **Design** • use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups • generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design **Make** • select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately • select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities **Evaluate** • investigate and analyse a range of existing product • evaluate their ideas and products against their own design criteria and consider the views of others to improve their work

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• Compose and decompose shapes so that children recognise a shape can have other shapes within it. (M) • Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. (EAD) **ELG** • Share their creations, explaining the process they have used. (EAD) **ELG**	**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 **Cooking and nutrition** As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life. **Pupils should be taught to:** **Key stage 1** • use the basic principles of a healthy and varied diet to prepare dishes understand where food comes from	• understand how key events and individuals in design and technology have helped shape the world **Technical knowledge** • apply their understanding of how to strengthen, stiffen and reinforce more complex structures • understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages] • understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] • apply their understanding of computing to program, monitor and control their products **Cooking and nutrition** As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life. **Pupils should be taught to** **Key stage 2** • understand and apply the principles of a healthy and varied diet • prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed

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Design & Technology Curriulum Overview						
EYFS	**All About Me** Build model of own home or local landmark of Plymouth	**Woodland Explorers** Create a bug house/habitat	**To Infinity and Beyond** Build junk model rockets	**Things that Grow** Healthy food – fruit kebabs!	**Trains, Planes and Cars** Junk models – making vehicles	**On the Seven Seas** Boats
Y1	**Amazing Me** Healthy Eating – design a healthy dish	**Weather Watchers** Design and make a rain gauge	**What's in the Toy Box?** Design, make and evaluate a toy vehicle	**Our Local Area**	**Women in History**	**Kenya: Too Hot to Handle!**
Y2	**Our Great Britain**	**British Bridges** To design, make, test and evaluate a bridge	**Greenland: Below Zero**	**UK Climate**	**World Explorers World** Landmarks/ architecture Using 3-D Builder	**Commotion in the Ocean** Textiles – sea scene weaving
Y3	**Prehistoric Britain**	**Master of Disaster** Design a structure to withstand a natural disaster!	**Dinosaurs and Fossils**	**Food and Farming** Prepare a meal based on seasonality	**Egyptians** Design and make an Egyptian Pharaoh's Collar	**Plymouth Hoe: Our City!**
Y4	**Shang Dynasty** Food from another culture – prepare a savoury dish	**Journey Through North America**	**Ancient Greece**	**Australia**	**Ancient Rome** Create Roman Chariots – using mechanisms	**Inventions Which Changed the World** Create a model lighthouse, incorporating a circuit
Y5	**Romans in Britain/ Anglo Saxons** Design a Roman/Anglo-Saxon tunic (pillow case)	**Space: Out of this World** Program and control a Robot space buggy (Mars Rovers)!	**Vikings**	**Our Changing World**	**Ancient Maya**	**Amazon Rainforest** Make a percussion instrument e.g. rain stick, xylophone, string instrument
Y6	**Dartmoor** Draw and design a 3D map of an area on Dartmoor Programme drones to hover above 3D maps.	**Tudors: Port of Plymouth** Design a Tudor purse	**British Empire & Industrial**	**Biomes of the world**	**20th Century Conflict** Food – rationing (food groups) / seasonality	

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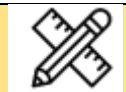
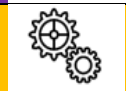
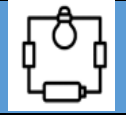
Design		A plan or drawing produced to show the look and function or workings of a building, garment, or other object before it is made. Computer Aided Design (CAD) can be used to refine designs (KS2).
Make		The process of applying skills to make or produce something. This involves the use of a variety of tools and materials.
Evaluate		Judging the quality, value or relevance of a product through identifying improvements that could be made.
Cooking & Nutrition		Preparing food for a particular purpose and audience. Researching and considering the nutritional value of each food group.
Technical knowledge: Textiles		The process of weaving, knitting, sewing and joining a variety of materials such as cotton, felt, leather etc to produce a quality product with a particular purpose.
Technical Knowledge: Mechanisms		Combining a system of parts working together in a machine to create a quality product with a particular purpose.
Technical Knowledge: Structures		The process of using wood, metal, card and other materials to constructor build a product from different interrelated parts with a fixed location on the ground.
Technical Knowledge: Electrical Systems / ICT		Using a network of electrical components (used to supply, transfer, and use electric power) to produce a quality product with a particular purpose. CAD / Programming.

Design	Make	Evaluate	Technical Knowledge				
			Cooking	Textiles	Mechanisms	Structures	Circuits / ICT
							

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SEQUENCE OF LESSONS FOR EVERY DESIGN & TECHNOLOGY UNIT.

Year	Design 	Make 	Evaluate 
1	**Understand context, users and purposes:** • Use senses to support enquiry of products within contexts, such as imaginary, story based, home, school, gardens, playgrounds, local community, industry and the wider environment. • State what the product is and talk about the parts and how they work. • Use simple design criteria to help develop their ideas. **Generating, developing, modelling and communicating ideas:** • Generate ideas by drawing on their own experiences. • Use knowledge of existing products to generate ideas, • Develop and communicate ideas by talking, drawing and using pictures. • Decide on resources from a given selection.	**Planning:** • Discuss and record the stages of making. • Select from a range of tools and equipment and begin to explain the choices. **Practical Skills & Techniques:** • Follow procedures for safety and hygiene. • Use a range of materials and components, including construction materials and kits, textiles, food ingredients and mechanical components selected by the teacher. • Cut and shape materials and components. • Roll paper and card to form a tube. Cut using scissors. Join using glue and tape. • Use finishing techniques, including those from art and design	**Own Products:** • Discuss their design ideas and what they are making. • Make simple judgements about how well their product works against small amount of design criterion. • Start to discuss changes made during the making process. **Existing Products:** • Generate a design criterion through adult led discussion. • Through adult led discussion, identify the basic purpose and features of existing products (purpose, material, user, function). • Express likes and dislike about existing products. • Identify some design features.
2	**Understand context, users and purposes:** • Use knowledge of existing products to support planning of similar products. • State what the product is and say who is for and why. Describe how it works based on disassembling and investigating products.	**Planning:** • Discuss and record an increased number of stages of making. • Select from a range of tools and equipment and begin to explain the choices. • Select appropriate materials.	**Own Products:** • Discuss their design ideas and what they are making. • Make simple judgements about how well their product works against an increasing number of design criteria. • Start to discuss changes made during the making process.

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	• Describe the products purpose and how it is suitable for the intended users. • Use simple design criteria to help develop their ideas. **Generating, developing, modelling and communicating ideas:** • Generate ideas by drawing on their own experiences. • Use knowledge of existing products to generate ideas. • Develop and communicate ideas by talking and drawing. • Model ideas by exploring materials, components and construction kits and by making templates and mock-ups. Consider realistic resources when making design decisions.	**Practical Skills & Techniques:** • Follow procedures for safety and hygiene. • Use a range of materials and components, including construction materials and kits, textiles, food ingredients and mechanical components to improve the look of my product. • Measure and mark materials and components using a pencil and ruler. • Cut and shape materials and components. • Assemble, join and combine materials and components using different materials. • Use finishing techniques, including those from art and design	• Suggest how their products could be improved. **Existing Products:** • Generate a design criterion through class led discussion. • Through adult / class led discussion, identify the basic purpose and features of existing products (purpose, material, user, function). • Express likes and dislike about existing products and say why. • Identify some design features.
3	**Understand contexts, users and purposes:** • Work confidently within a range of contexts, such as imaginary, story-based, home, school, gardens, playgrounds, local community, industry and the wider environment. • Gather information about the needs and wants of particular individuals and groups. • Identify the needs, wants, preferences and values of particular individuals and groups and use this to develop a design criterion.	**Planning:** • Discuss and reason about the order of the main stages of making. • List and select tool and equipment choices with reasoning. • Select appropriately from a range of materials. **Practical Skills & Techniques:** • Plan and follow procedures for safety and hygiene. • Suggest and use a range of materials and components, including construction materials and kits, textiles, food ingredients and mechanical components.	**Own Products:** • Refer back to their design ideas and when making. • Use their design criteria to evaluate their completed product e.g. how well it met a particular purpose. • Evaluate and alter the product during the making process. • Suggest some improvements and give detail about what was good and not so good about their original design. **Existing Products:** • Use existing products to independently generate a design criterion.

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	• Use evidence to Identity their own design criteria and use this to inform their ideas. **Generating, developing, modelling and communicating ideas:** • Generate realistic ideas, focusing on the needs of the user. • Include features of existing products when generating ideas. • Begin to use annotated sketches and cross-sectional drawings to develop and communicate their ideas. • Model ideas by exploring materials, components and construction kits and by making templates and mock-ups. Consider realistic resources when making design decisions.	• Measure and mark lengths to the nearest cm using a pencil & ruler or CAD. • Use a range of tools to cut and shape materials and components with some accuracy. • Independently assemble, join and combine materials and components with some accuracy. • Apply a range of finishing techniques, including those from art and design, with some accuracy, amend to improve the product.	• Identify and rate the purpose and features of existing products (purpose, material, user, function). • Identify pros and con about a product and use to inform design choices. • Analyse and rate design features (durability, functionality etc). • Begin to discuss designers/engineers.
4	**Understand contexts, users and purposes:** • Work confidently within a range of contexts, such as imaginary, story-based, home, school, gardens, playgrounds, local community, industry and the wider environment. • Gather information about the needs and wants of particular individuals and groups. • Identify the needs, wants, preferences and values of particular individuals and groups and use this to develop a design criterion. • Use evidence to Identity their own design criteria and use this to inform their ideas. **Generating, developing, modelling and communicating ideas:**	**Planning:** • Discuss and reason about the order of the main stages of making. • List and select tool and equipment choices with reasoning. • Select appropriately from a range of materials. **Practical Skills & Techniques:** • Plan and follow procedures for safety and hygiene. • Suggest and use a range of materials and components, including construction materials and kits, textiles, food ingredients and mechanical components. • Measure and mark lengths to the nearest cm using a pencil & ruler or CAD.	**Own Products:** • Refer back to their design ideas and when making. • Use their design criteria to evaluate their completed product e.g. how well it met a particular purpose. • Evaluate and alter the product during the making process. • Suggest some improvements and give detail about what was good and not so good about their original design. **Existing Products:** • Use existing products to independently generate a design criterion. • Identify and rate the purpose and features of existing products (purpose, material, user, function). • Identify pros and con about a product and use to inform design choices. • Analyse and rate design features (durability, functionality etc) using an independently thought out rating system.

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	• Generate realistic ideas, focusing on the needs of the user. • Include features of existing products when generating ideas. • Use annotated sketches and cross-sectional drawings to develop and communicate their ideas; when designing explore different initial ideas before coming up with the final design. • Test ideas by exploring materials, components and construction kits and by making templates and mockups. • Make design decisions that consider the availability of resources. • Use information and communication technology, where appropriate, to communicate ideas. • Use Computer Aided Design (CAD) to demonstrate ideas and make templates for designs.	• Use a range of tools to cut and shape materials and components with some accuracy. • Independently assemble, join and combine materials and components with some accuracy using a wider range of tools and resources. • Apply a range of finishing techniques, including those from art and design, with some accuracy, amend to improve the product giving reasons for the amendments.	• Begin to discuss designers/engineers. How, when and why particular products were made. • Discuss the impact of products and why they were designed.
5	**Understand contexts, users and purposes:** • Work confidently within a range of contexts, such as imaginary, story-based, home, school, gardens, playgrounds, local community, industry and the wider environment. • Carry out research, using surveys, interviews, questionnaires and web-based resources. • Identify and understand the needs, wants, preferences and values of particular individuals and groups and use this to develop a design criterion. • Use evidence to Identity their own design criteria and use this to inform and refine ideas. **Generating, developing, modelling and communicating ideas:**	**Planning:** • Plan, discuss and reason about the order of the main stages of making. • Explain, list and select tool and equipment choices with reasoning. • Select from a range of materials and components according to their characteristics. **Practical Skills & Techniques:** • Suggest, plan and follow strategies and procedures for health and hygiene. • Identify, select and use a range of materials and components,	**Own Products:** • Justify and consider design idea throughout the making process. • Critically evaluate the quality of the design and fitness for purpose of their products as they design and make. • Evaluate their ideas and products against their original design specification. **Existing Products:** • Identify and rate the purpose and features of existing products (purpose, material, user, function). • Evaluate design features in further detail. • Discuss in further detail the designers/engineers. How, when and why particular products were made. Consider a range of materials independently.

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	• Generate innovative ideas, drawing on research. • Select specific features of existing products when generating ideas. • Develop and communicate ideas through sketches which include exploded diagrams. • Test and adapt ideas by exploring materials, components and construction kits and by making templates and mockups. • Make design decisions, considering constraints such as time and resources available. • Use information and communication technology, where appropriate, to develop and communicate ideas. • Use CAD to demonstrate detailed design ideas and make templates for designs.	including construction materials and kits, textiles, food ingredients and mechanical components. • Accurately measure and mark lengths to the nearest cm using a pencil & ruler or CAD. • Use a range of tools to cut and shape materials and components accurately. • Accurately and independently assemble, join and combine materials and components building on prior knowledge. • Accurately apply a range of finishing techniques, including those from art and design. Amend to improve the product giving reasons for the amendments.	• Understand the impact products have beyond their intended purpose. • Develop a further understanding of how key designs can improve processes.
6	**Understand contexts, users and purposes:** • Work confidently within a range of contexts, such as imaginary, story-based, home, school, gardens, playgrounds, local community, industry and the wider environment. • Carry out research, using surveys, interviews, questionnaires and web-based resources. • Identify and understand the needs, wants, preferences and values of particular individuals and groups and use this to develop a design criterion. • Use evidence to Identity their own design criteria and use this to inform and refine ideas. **Generating, developing, modelling and communicating ideas:**	**Planning:** • Plan, discuss and reason about the order of the main stages of making. • Explain, list and select tool and equipment choices with reasoning. • Select from a range of materials and components according to their characteristics. **Practical Skills & Techniques:** • Suggest, plan and follow strategies and procedures for health and hygiene. • Identify, select and use a range of materials and components, including construction materials and kits, textiles, food ingredients and mechanical components.	**Own Products:** • Justify and consider design idea throughout the making process. • Critically evaluate the quality of the design and fitness for purpose of their products as they design and make. • Evaluate their ideas and products against their original design specification by carrying out appropriate tests throughout the making process. • Explain specific ways that their product could be improved. Show amendments on labelled diagram. **Existing Products:** • Generate design criteria through informed discussion.

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	• Generate innovative ideas, drawing on research. • Select specific features of existing products when generating ideas. • Develop and communicate ideas through sketches which include exploded diagrams and cross sections. • Test and adapt ideas by exploring materials, components and construction kits and by making templates and prototypes. • Make design decisions, considering constraints such as time, resources and cost. • Use information and communication technology, where appropriate, to develop and communicate ideas. Using measurements. • Use CAD to demonstrate detailed design ideas and make templates for designs and cross sections of designs. • Clarify ideas through discussions drawing upon and using a range of sources of information.	• Accurately measure and mark lengths to the nearest mm using a pencil & ruler or CAD. • Use a range of tools to cut and shape materials and components accurately. • Accurately and independently assemble, join and combine materials and components building on prior knowledge. • Accurately apply a range of finishing techniques, including those from art and design and ICT. Amend to improve the product giving reasons for the amendments. • Finished product to a high standard, following the plan and using appropriate tools and techniques.	• Evaluate the purpose and features of existing products (purpose, material, user, function). • Use pros and cons to justify design decisions. • Evaluate design features in further detail. • Discuss in further detail the designers/engineers. How, when and why particular products were made. Consider cost and materials. • Understand the impact products have beyond their intended purpose. • Develop a further understanding of how the key designs of individuals in design and technology have helped shape / improve (or worsen) the world. Debate pros and cons of DT.

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Design & Technology Progression of Learning							
	EYFS	**Y1**	**Y2**	**Y3**	**Y4**	**Y5**	**Y6**
Technical Knowledge: Textiles 	**Nursery:** • Explore different materials freely, to develop their ideas about how to use them and what to make. (EAD) • Develop their own ideas and then decide which materials to use to express them. (EAD) • Join different materials and explore different textures. (EAD) **Foundation:** • Return to and build on their previous learning, refining ideas and developing their ability to represent them. (EAD) • Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. (EAD) **ELG** • Share their creations, explaining the process they have used. (EAD) **ELG**	• Sort and group textiles by texture and colour. • Cut and stick fabrics together. • Apply simple decoration, e.g. fabric crayons, gluing on feathers etc.	• Use a simple template. • Join fabrics using glue, staples and thread. • Decorate fabrics by painting and printing.	• Make and use a simple paper pattern. • Cut and join fabrics using running stitch, buttons and bond web. • Decorate fabric by applying beads and sequins.	• Make and use a paper pattern that includes a seam allowance. • Use a wide range of finishing techniques. • Use more than one type of stitch to join materials together. • Select the most appropriate joining technique.	• Create own patterns and templates. • Select an appropriate material to create a product. • Use a wide range of techniques to add colour, texture and pattern to fabric. • Sew using a range of stitches including, backward running stitch and over sewing. • Join fabrics in a range of different ways using zips, tie clasp, toggles, press-studs and buttons.	• Create my own patterns and templates that are accurately measured. • Use different but appropriate way to join materials, e.g. glue, pins, press studs, Velcro, various stitches, buttons etc. • Use a sewing machine to join and decorate fabric.

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	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
Technical Knowledge: Food 	**Nursery:** • Use all their senses in hands-on exploration of natural materials. (UW) • Make healthy choices about food, drink, activity and toothbrushing. (PSED) **Foundation:** • Return to and build on their previous learning, refining ideas and developing their ability to represent them. (EAD) • Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. (EAD) **ELG** • Share their creations, explaining the process they have used. (EAD) **ELG**	*Use the basic principles of a healthy and varied diet to prepare dishes.* *Understand where food comes from.*			*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.*		
		• Sort fruit and vegetables by taste, shape, size, colour and texture. • Sort food into groups, e.g. fruit, vegetable, meat etc. • Use basic tools to cut, shape and mix, e.g. cutters and whisks. • Know where a few of the foods I am cooking comes from.	• Work safely and hygienically. • Sort and classify food into food groups, e.g. vegetables, pulses, cereals, dairy etc. • Measure and weigh accurately using cups and spoons. • Talk about what happens when I cook and bake. • Know what makes a healthy diet. • Talk about where some of the food they are cooking comes from.	• Talk about what needs to be done in order to work safely and hygienically. • Use simple tools e.g. hand whisk, rolling pins. • Sort and classify food according to specific food groups, e.g. proteins, carbohydrates, fats etc. • Measure and weigh using standard units and scales. • Talk about the way in which food processing can affect the taste, appearance, texture and colour of food.	• Talk about why we need to work safely and hygienically. • Talk about the characteristics of a range of food and ingredients and where the foods come from. • Use knowledge of food and cooking to start generating their own recipes. • Talk in simple terms about the physical and chemical (observational skills). • Know how some of the ingredients are grown, reared, caught and processed.	• Apply the rules for basic food hygiene and other safe practices e.g. hazards relating to the use of ovens. • Talk in detail about the characteristics of a range of food and ingredients and where the food comes from. • Talk about the impact of changing proportions within a recipe. • Talk in scientific terms about the physical and chemical changes that take place when food is cooked. • Know how a variety of the ingredients are grown, reared,	• Know and understand the practice needed in terms of food hygiene and kitchen safety. • Talk about how the properties of certain foods can affect the final product. • Choose the appropriate methods and equipment for measuring, e.g. time, dry goods, liquids etc. • Compare and evaluate several ideas in order to draw up a design specification. • Compare commercial and domestic processes for producing food, e.g. bread. To know how most of ingredients are grown, reared,

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				• Know what makes a varied and healthy diet. • Talk about where the food they are cooking comes from.		caught and processed.	caught and processed. • To understand seasonality.

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Design & Technology Progression of Learning

	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
Technical Knowledge: Mechanisms 	**Nursery:** • Use one-handed tools and equipment, for example, making snips in paper with scissors. (PD) • Use all their senses in hands-on exploration of natural materials. (UW) • Explore different materials freely, to develop their ideas about how to use them and what to make. (EAD) • Develop their own ideas and then decide which materials to use to express them. (EAD) • Join different materials and explore different textures. (EAD) **Foundation:** • Return to and build on their previous learning, refining ideas and developing their ability to represent them. (EAD) • Create collaboratively, sharing ideas, resources and skills. (EAD) • Share their creations, explaining the process they have used. (EAD) **ELG**	*Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.* • Explore and talk about books containing moving pictures. • Construct a **simple slider** with support. • Construct a **simple lever** with support. • Explore and use construction kits containing gears.	• Deconstruct a **simple slider** and describe how it works. • Construct a **simple slider** independently. • **Make a lever** by joining card strips with paper fasteners. • Attach wheels to a chassis using an **axle,** e.g. cotton reels and dowel. • Use pencils or tubes **as rollers** to move an object across the floor. • Construct a **simple pulley** using rope over a horizontal bar to raise an object off the ground.	*Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages].* • Deconstruct and reconstruct **sliders and levers.** • Join levers **to make linkages** to create moving parts. • Vary the position of the pivot point to lift a load using **a lever.** • Construct a **simple pneumatic system** with **one moving part.** • **Identify the cam within a simple mechanism and explain how movement is changed.** • Construct boxes of different sizes from a net.	• Create a range of **sliders and levers** to produce horizontal and vertical movement. • Combine **sliders and levers to produce a range of movements.** • Construct a **pneumatic with two moving parts.** • Describe the way in which a **cam changes** rotary motion into linear motion. • Use a range of different ways to **attach an axle** to a chassis, e.g. card triangles, drilled holes, cable clips and clothes pegs.	• Choose and use a range of **sliders and levers** accurately to create a range of effects. • Use simple mechanisms e.g., pulleys, gears, cams, cogs. Attach to motors for electrical control. • Use the computer to operate switch and devise simple programmes to control own models. • Describe in detail the way in which an axle and **chassis help a vehicle to move.** • Talk about how **pulleys and drive**	• Use a range of technical vocabulary to describe the properties and **functions of mechanisms.** • Generate questions to investigate. • Talk about the relationship between **a cam and follower, an off-centre cam, a peg cam, a pear-shaped cam and a snail cam.** • Design and build a working model where the direction of movement can be controlled, e.g. with a **chassis with a pivoting axle.** • Know how a belt and pulley system can be used to reverse the direction of rotation, and alter the plane

Design & Technology - Whole School Progression Map

			• Use **construction kits with gears** to construct a line of gears that turn.	• Attach a fixed axle to a chassis and add wheels ensuring that they can move freely. • **Construct a pulley** that allows a load to travel horizontally along a rope. • Use **construction kits with gears to mesh gears** at right angles.	• Identify and describe products that **contain pulleys** and drive belts.	**systems can be driven by motor and computer.**	of rotation by 90 degrees. • Explain how the **number of teeth of a gear affects the speed of rotation.**

Design & Technology Progression of Learning

Design & Technology - Whole School Progression Map

	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
Technical Knowledge: Structures 	**Nursery:** • Use one-handed tools and equipment, for example, making snips in paper with scissors. (PD) • Select shapes appropriately: flat surfaces for building, a triangular prism for a roof etc. (M) • Combine shapes to make new ones – an arch, a bigger triangle etc. (M) • Use all their senses in hands-on exploration of natural materials. (UW) • Make imaginative and complex 'small worlds' with blocks and construction kits, such as a city with different buildings and a park. (EAD) • Explore different materials freely, to develop their ideas about how to use them and what to make. (EAD) • Develop their own ideas and then decide which	• Explore and investigate a range of simple, large scale construction materials, e.g. cardboard boxes. • Build buildings, bridges and towers using small-scale construction materials, e.g. Duplo. • Make simple 3D structures using straws.	• Construct a range of structures using simple construction kits. • Make **their structures more stable** by widening the base. • Make a square frame from strip wood. • Make a simple card hinge.	*Apply their understanding of how to strengthen, stiffen and reinforce more complex structures* • Deconstruct and assemble the net of basic 3D shapes. • Measure and cut dowel accurately. • Use a range of materials to make simple joints, glue, tape and paper clips. • Make a rectangular frame from strip wood. • **Strengthen 2D frames** by adding diagonal bracing struts.	• Create nets of increasingly complex 3D shapes which include the addition of gluing tabs. • Use a range of materials to make joints including, card strips, elastic bands, thread and ties, and plastic tubing. • **Reinforce and strengthen 3D framework** using the concept of 'triangulation'. • **Explain in detail why some structures fail.**	• **Construct regular free-standing 3D frames**. • **Use techniques for reinforcing and strengthen structures.** • Use construction kits and building instructions to **identify how structures are established and strengthened.**	• Create nets and templates accurately in a range of sizes. • Use a range of methods **to strengthen 3D structures and frames.** • Build a range of structures using a wide range of effective materials. • Investigate measure and record the load tolerance of different structures. • Find ways of improving a structures load-bearing capacity.

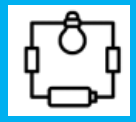
Design & Technology - Whole School Progression Map

	materials to use to express them. (EAD) • Join different materials and explore different textures. (EAD) **Foundation:** • Return to and build on their previous learning, refining ideas and developing their ability to represent them. (EAD) • Create collaboratively, sharing ideas, resources and skills. (EAD) • Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. (EAD) **ELG** • Share their creations, explaining the process they have used. (EAD) **ELG**						

Design & Technology Progression of Learning

	EYFS	Y1	Y2	Y3	Y4	Y5	Y6

Design & Technology - Whole School Progression Map

Technical Knowledge: Circuits / ICT 	**Nursery:** • Develop their own ideas and then decide which materials to use to express them. (EAD) • Join different materials and explore different textures. (EAD) **Foundation:** • Return to and build on their previous learning, refining ideas and developing their ability to represent them. (EAD) • Create collaboratively, sharing ideas, resources and skills. (EAD) • Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. (EAD) **ELG** • Share their creations, explaining the process they have used. (EAD) **ELG**	• Use my senses to explore battery powered toys, e.g. cars, trains, tills etc. I can talk about electrical equipment in my home, e.g., kettle, telephone, and microwave. • Explore the use of bulbs, wires and batteries.	• Talk about how common electrical equipment works, e.g., kettle, telephone, and microwave. • Create a simple circuit using a battery, bulb and wires. • Use remote controlled devices, e.g. a remote controlled vehicle, Bee bot etc.	*Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors].* • Describe how a simple battery **powered circuit can be controlled by different kinds of switches.** • Create simple circuits incorporating a **battery, bulb, switch and wires.** • Talk about simple electrical safety. • Explore and describe how an electric motor can be used in a circuit. • Use a remote-controlled device to switch lights on and off. • Explore and describe materials that can be used to conduct electricity. • Explore and explain how the direction and speed of an **electrical motor can be controlled.** • **Explore and program a simple control device**	• Explore and **describe how electrical circuits with switches can be used.** • Use **switches in a range of circuits** to control components, e.g. lights in a lighthouse, a movement sensor in a burglar alarm. • Use my knowledge of **conductors and insulators when constructing circuits.** • Talk in depth about the hazard and safety issues associated with electricity. • Apply appropriate safety measures when constructing circuits. • **Talk about how electricity can be used to control movement.** • Explore and use a complex control system, e.g., a **light sensor.** • To apply their understanding of computing to program, monitor and control their products.

N.B: The shaded part is the skills each year group will be covering. You may need to look at some of the skills in a year group below yours if it is not covered the year before to make sure you are pitching your lesson correctly. The parts in bold are the National Curriculum words and must be taught. The rest is a guide which may help to establish where your children may be working. It is a 'best fit' model.