

DT at ABBEY



At Abbey, we nurture a love of learning. We open windows of opportunity by creating memorable moments. Learning with meaningful relationships supports our children to become valued members of the community. We embed the core subjects within an expansive and challenging curriculum. We develop and nurture young minds, creating memorable moments and events. We promote and celebrate equality and diversity.

Intent

At Abbey Primary School, Design and Technology is a vital part of our creative curriculum, inspiring pupils to become innovative thinkers. Our DT curriculum inspires pupils to develop their practical skills by using specific tools, and evaluate their own and others' work, building confidence and resilience. Our curriculum fosters an awareness of how design and technology influence our daily lives and the global environment. By exploring the work of designers and innovators from diverse backgrounds and historical contexts, pupils gain insight into the cultural, social, and environmental impact of design and technology.

Impact

Our sequential scheme of work focuses on the knowledge and skills of: structures, mechanical systems, cooking and nutrition, digital world, textiles and electrical systems. At Abbey, our DT curriculum is structured around the design progression of skills: design, make, evaluate with the support of technical knowledge. Our learning journey includes the study of key skills, key knowledge and technical vocabulary through practical tasks, group work, computer-aided design, and independent challenges. Our lesson journey includes SEEC, retrieval, key practical skill and knowledge, and opportunities for independent 'making' practical. DT books are used to record pupils' initial designs, developing skills and displaying photographic evidence of their end of unit result. Our curriculum map outlines the units covered and the cross curricular links. Regular formative assessment allows teachers to adapt lessons to meet pupils' needs and ensures progression across year groups. In DT, we are mindful of the limitations of summative assessment, especially when making evaluative judgements about practical outcomes.

By the end of their primary education, pupils will:

- Demonstrate a solid understanding of the functional and aesthetic properties of materials and resources.
- Use a repertoire of skills to design, make, and evaluate products.
- Confidently use tools and techniques to shape, decorate, and manufacture, applying technical knowledge with precision and creativity.
- Apply principles of healthy eating, understanding food groups, seasonality, and cooking techniques to create nutritious meals.
- Appreciate the contributions of key designers, inventors, and events from history and the modern day, connecting these to their own work.
- Understand how design impacts the wider world, including environmental, social, and cultural considerations.
- Evaluate their own work and that of others, expressing informed opinions, identifying areas for improvement, and taking pride in their achievements.

Through our DT curriculum, pupils gain the confidence, creativity, and resilience to take risks and solve problems. They leave primary school as reflective learners with a strong foundation of skills and knowledge within Design and Technology.

PROGRESSION OF SUBSTANTIVE KNOWLEDGE – what I need to know to be a good designer

	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
Structures		<p><u>Constructing a windmill</u> Cylinders are a strong type of structure.</p> <p>Axles are used to make parts turn into a circle.</p> <p>Different structures are used for different purposes.</p> <p>A structure is something that has been made and put together.</p> <p>Sails or blades of a windmill are moved by the wind.</p> <p>Stable structures don't topple.</p> <p>Adding weight can make it more stable.</p>	<p><u>Baby bear's chair</u> Shapes and structures with wide, flat bases are the most stable.</p> <p>The shape of a structure affects its strength.</p> <p>Materials can be manipulated to improve strength and stiffness.</p> <p>A structure is something which has been formed.</p> <p>A stable structure is firmly fixed.</p> <p>A strong structure doesn't break.</p> <p>A stiff structure does not bend.</p>	<p><u>Constructing a castle</u> A castle needs to be strong and stable.</p> <p>The features of a castle.</p> <p>A paper net is a flat 2D shape that becomes a 3D shape.</p> <p>Wide and flat based objects are more stable.</p> <p>The importance of strength and stiffness in structures.</p>	<p><u>Pavilions</u> What a pavilion is and its purpose.</p> <p>A product's function means its purpose.</p> <p>Cladding can be applied for effect.</p> <p>Target audience means who the product is designed for.</p>		<p><u>Playgrounds</u> A structure can be strengthened by manipulating materials and shapes.</p> <p>Use a 'footprint plan'.</p> <p>A prototype is a cheap model to test a design idea.</p>

PROGRESSION OF SUBSTANTIVE KNOWLEDGE - what I need to know to be a good designer

	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
Mechanisms / mechanical systems			<p><u>Fairground wheel</u> Everyday objects have mechanisms.</p> <p>Mechanisms limit unwanted movement.</p> <p>Everyday objects utilise wheels and axels.</p> <p>Wheels must turn to work effectively.</p> <p><u>Making a moving monster</u> Mechanisms are moving parts that work together.</p> <p>An input is the energy used to start something working.</p> <p>An output is the movement that happens because of the input.</p> <p>A lever is something that turns on a pivot.</p> <p>A linkage mechanism is made up of a series of levers.</p>		<p><u>Making a slingshot car</u> All moving things have kinetic energy.</p> <p>Kinetic energy is the energy that something has by being in motion.</p> <p>Air resistance is the level of drag on an object as it is forced through the air.</p> <p>The shape of a moving object will affect how it moves.</p>	<p><u>Making a pop-up book</u> Mechanisms control movement.</p> <p>Mechanisms can be used to change one kind of motion into another.</p>	

PROGRESSION OF SUBSTANTIVE KNOWLEDGE - what I need to know to be a good designer

	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
Cooking and nutrition		<p><u>Smoothies</u> The difference between fruits and vegetables.</p> <p>Some foods typically known as vegetables are actually fruits (e.g. cucumber).</p> <p>A blender mixes ingredients together into a smooth liquid.</p> <p>Some fruit has seeds and vegetables do not.</p> <p>Fruits grow on trees or vines.</p> <p>Vegetables can grow either above or below ground.</p> <p>Vegetables can come from different parts of the plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber).</p>		<p><u>Eating seasonally</u> Not all fruits and vegetables are grown in the UK.</p> <p>Cooking instructions are known as 'recipe'.</p> <p>Climate affects food growth.</p> <p>Vegetables and fruit grow in certain seasons.</p> <p>Imported food is brought into the country.</p> <p>Exported food is sent to another country.</p> <p>Seasonal foods have a positive impact on the environment.</p> <p>Coloured fruits and vegetables have similar nutritional benefits.</p> <p>The appearance of food is as important as taste.</p>		<p><u>Developing a recipe</u> Beef is from cattle and is reared and processed, including key welfare issues.</p> <p>Adapt a recipe to make it healthier by substituting ingredients.</p> <p>Use a nutritional calculator to see how healthy a food option is.</p> <p>'Cross-contamination' means bacteria and germs have been passed onto ready-to-eat foods and it happens when these foods mix with raw meat or unclean objects.</p>	

PROGRESSION OF SUBSTANTIVE KNOWLEDGE - what I need to know to be a good designer

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Digital world				<p><u>Wearable technology</u> A 'loop' is code that repeats something.</p> <p>A microbit is a pocket-sized, codeable computer.</p> <p>A simulator is able to replicate the functions of an existing piece of technology.</p>			<p><u>Navigating the world</u> Accelerometers can detect movement.</p> <p>Sensors mean the product can function without human input.</p> <p>'Multifunctional' is a product that has multiple functions.</p> <p>Magnetometers measure the Earth's magnetic field determines the direction you're facing.</p>
Textiles		<p><u>Puppets</u> 'Joining technique' connects two pieces of material.</p> <p>There are various methods of joining fabric.</p> <p>Different techniques are used for different purposes.</p> <p>A template is used to cut out the same shape multiple times.</p>					<p><u>Waistcoats</u> Importance of consistently sized stitches.</p>

PROGRESSION OF SUBSTANTIVE KNOWLEDGE - what I need to know to be a good designer

	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
Electrical systems					<p><u>Torches</u> An electrical circuit must be complete for electricity flow.</p> <p>A switch can be used to complete and break a circuit.</p> <p>The features of a torch.</p>	<p><u>Doodlers</u> Series circuits have one direction for electricity flow.</p> <p>When there's a break in a series circuit, all components turn off.</p> <p>An electric motor converts electrical energy into rotational movement, causing the motor's axle to spin.</p> <p>A motorised product uses a motor to function.</p>	

PROGRESSION OF DISCIPLINARY KNOWLEDGE – thinking like a designer

	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
Design		<p><u>Constructing a windmill</u> The importance of clear design criteria.</p> <p>Include individual preferences in design.</p> <p><u>Puppets</u> Use a template to create a design.</p> <p><u>Smoothies</u> Design smoothie carton packaging by-hand or on ICT software.</p>	<p><u>Baby bear's chair</u> Explore the features of structures.</p> <p>Generate ideas using modelling.</p> <p><u>Fairground wheel</u> Conduct a simple survey/discussion to gather opinions.</p> <p>Use a simple design brief, outlining the intended use, target user, and key features of the product.</p> <p>Create ideas with design criteria.</p> <p>Explain parts of a design using labels.</p> <p>Explain how something works through drawings.</p> <p><u>Making a moving monster</u> Create and follow a class design criteria for an audience.</p>	<p><u>Eating seasonally</u> Considering the taste, texture, smell and appearance when creating a recipe.</p> <p><u>Wearable technology</u> Suggest which features on a microbit might be useful.</p> <p>Develop design ideas through annotated sketches.</p> <p>Develop a design criteria to respond to a design brief.</p> <p><u>Constructing a castle</u> Design a castle with key features.</p> <p>Draw and label a castle design using 2D shapes, labelling 3D shapes that will create the features, materials and colours.</p> <p>Design and decorate the castle tower on CAD.</p>	<p><u>Pavilions</u> Design a stable pavilion that's aesthetically pleasing and select materials.</p> <p>Build frame structures designed to support weight.</p> <p><u>Making a slingshot car</u> Design a shape that reduces air resistance.</p> <p>Draw a net to create a structure.</p> <p>Choose shapes that increase/decrease speed.</p> <p>Personalise a design.</p> <p><u>Torches</u> Design a torch, considering the target audience and create both design and success criteria.</p>	<p><u>Doodlers</u> Identify factors that could be changed and explain how these would alter the form and function.</p> <p>Develop design criteria based on investigating existing products.</p> <p>Develop the design criteria that clarifies the target user.</p> <p><u>Making a pop-up book</u> Design a pop-up book which uses a mixture of structures and mechanisms.</p> <p>Storyboard ideas for a book.</p> <p><u>Developing a recipe</u> Adapt a traditional recipe. Write an amended method for a recipe. Design appealing packaging.</p>	<p><u>Waistcoats</u> Design a waistcoat linked to the design criteria.</p> <p>Annotate design explaining their decisions.</p> <p><u>Playgrounds</u> Design a playground that features a variety of different structures.</p> <p><u>Navigating the world</u> Write a design brief from information submitted by a client.</p> <p>Develop a design criterion.</p> <p>Suggest additional functions for a navigation tool.</p> <p>Developing a product through annotated sketches.</p> <p>Place and maneuver 3D objects, using CAD.</p>

PROGRESSION OF DISCIPLINARY KNOWLEDGE – thinking like a designer

	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
Make		<p><u>Constructing a windmill</u> Make a stable structure.</p> <p>Cut and assemble a windmill.</p> <p>Make functioning turbines and axles.</p> <p>Puncture holes.</p> <p>Add weight.</p> <p>Create supporting structures.</p> <p><u>Puppets</u> Cut fabric with scissors.</p> <p>Use joining methods to decorate.</p> <p>Sequence steps during construction.</p> <p><u>Smoothies</u> Chop fruit and vegetables safely.</p>	<p><u>Baby bear's chair</u> Use design criteria.</p> <p>Create joints and structures.</p> <p>Build a strong and stiff structure.</p> <p><u>Fairground wheel</u> Explain choices based on the properties of materials and components.</p> <p>Follow and recall safety instructions.</p> <p>Know that some tools are sharp.</p> <p>Shape objects to improve how they work.</p> <p><u>Making a moving monster</u> Make linkages using levers pivots.</p> <p>Adjust linkages using width, length and thickness.</p> <p>Cut and assemble components.</p>	<p><u>Eating seasonally</u> Prepare a safe workspace.</p> <p>Follow instructions.</p> <p>Taste and select seasonal ingredients.</p> <p>Peel and cut ingredients safely.</p> <p><u>Wearable technology</u> Follow design requirements.</p> <p>Write a program to control and monitor, that will initiate a flashing LED algorithm.</p> <p><u>Constructing a Castle</u> Construct a range of 3D geometric shapes using nets.</p> <p>Create features for individual designs.</p> <p>Make facades from a range of recycled materials.</p>	<p><u>Pavilions</u> Create a range of different shaped, free-standing frame structures.</p> <p>Select materials to build a strong structure.</p> <p>Reinforce corners to strengthen the structure.</p> <p>Create a design in accordance with a plan.</p> <p>Create different textural effects with materials.</p> <p><u>Making a slingshot car</u> Measure, mark, cut and assemble with accuracy.</p> <p>Make a model based on a design.</p> <p><u>Torches</u> Make a working circuit and switch.</p> <p>Assemble a torch using design and success criteria.</p>	<p><u>Doodlers</u> Alter a product's form and function.</p> <p>Make a series circuit with motor.</p> <p>Construct a product with design criteria.</p> <p>Break down the construction process into steps.</p> <p><u>Making a pop-up book</u> Follow a design brief.</p> <p>Make mechanisms to produce movement.</p> <p>Use layers and spacers to hide the workings parts.</p> <p><u>Developing a recipe</u> Cut and prepare vegetables safely. Use equipment safely. Know how to avoid cross-contamination. Follow a step-by-step method carefully to make a recipe.</p>	<p><u>Waistcoats</u> Use a template when cutting fabric.</p> <p>Mark and cut fabric.</p> <p>Sew a running stitch.</p> <p>Attach features to decorate.</p> <p>Use a secure fastening.</p> <p>Learn different decorative stitches.</p> <p><u>Playgrounds</u> Build a range of structures.</p> <p>Measure, mark and cut wood.</p> <p>Reinforce and add decoration.</p> <p><u>Navigating the world</u> Explain material choices and why they were chosen.</p> <p>Programming an N,E, S,W cardinal compass.</p>

PROGRESSION OF DISCIPLINARY KNOWLEDGE – thinking like a designer

	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
Evaluate		<p><u>Constructing a windmill</u> Test whether the structure is strong and stable.</p> <p>Suggest improvements.</p> <p><u>Puppets</u> Explain likes and dislikes.</p> <p><u>Smoothies</u> Taste and evaluate different combinations.</p> <p>Describe appearance, smell and taste.</p> <p>Suggest information on packaging.</p>	<p><u>Baby bear's chair</u> Test the strength, identifying the weakest part.</p> <p>Evaluate the strength, stiffness and stability.</p> <p><u>Fairground wheel</u> Discuss a range of products, explaining likes/dislikes.</p> <p>Evaluate existing products against design criteria.</p> <p>Evaluate ideas and creations against design criteria.</p> <p>Suggest improvements.</p> <p><u>Making a moving monster</u> Evaluate against design criteria.</p> <p>Test and adapt design.</p> <p>Use peer feedback to modify a final design.</p>	<p><u>Eating seasonally</u> Establish and use design criteria to test/review dishes.</p> <p>Describe the benefits and impacts of seasonal fruits and vegetables.</p> <p><u>Wearable technology</u> Analyse and evaluate wearable technology.</p> <p>Use feedback from peers to improve design.</p> <p><u>Constructing a Castle</u> Evaluate own work and the work of others based on the aesthetic of the finished product.</p> <p>Suggest points for modification of the individual designs.</p>	<p><u>Pavilions</u> Evaluate structures made by the class.</p> <p>Describe what characteristics of design made it effective.</p> <p>Consider effective and ineffective designs.</p> <p><u>Making a slingshot car</u> Evaluate speed based on shape and speed of performance.</p> <p><u>Torches</u> Evaluate electrical products.</p> <p>Test and evaluate the success of a final product.</p>	<p><u>Doodlers</u> Carry out a product analysis to look at the purpose of a product, with strengths/weaknesses.</p> <p>Determine which parts of a product affect its function and form.</p> <p>Analyse whether changes in configuration affect a product.</p> <p>Peer evaluate a set of instructions.</p> <p><u>Pop-up book</u> Evaluate others and receive feedback on own work.</p> <p>Suggest improvements.</p> <p><u>Developing a recipe</u> Identify the nutritional differences between different products, food groups and recipes.</p>	<p><u>Waistcoats</u> Reflect on their work continually.</p> <p><u>Playgrounds</u> Improve a design plan based on peer evaluation.</p> <p>Test and adapt a design to improve.</p> <p>Identify what makes a successful structure.</p> <p><u>Navigating the world</u> Explain how my program fits the design criteria.</p> <p>Develop an awareness of sustainable design.</p> <p>Identify key industries that utilise 3D CAD.</p> <p>Demonstrate a functional program as part of a product concept.</p>

PROGRESSION OF KEY VOCABULARY

	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
STRUCTURES		axle, bridge, design, design criteria, model, net, packaging, structure, template, unstable, stable, strong, weak	man-made, natural, properties, structure, stable, shape, test	2D, 3D, castle, key features, net, scoring, shape, stable, stiff, strong, tab	3D shapes, cladding, innovative, natural, reinforce		apparatus, equipment, playground, landscape
MECHANISMS/ MECHANICAL SYSTEMS			design, design criteria, wheel, ferris wheel, pods, axle holder, frame, mechanism, axle, input, linkage, mechanical, output, pivot, wheel		chassis, energy, kinetic, air resistance, graphics	input, motion, research, reinforce	
COOKING AND NUTRITION		fruit, vegetable, seed, leaf, root, stem, smoothie, healthy, carton, design, flavour, peel, slice		climate, diet, imported, ingredients, natural, processed, reared, recipe, seasonal, seasons, sugar		beef, reared, processed, ethical, diet, ingredients, supermarket, farm, balanced	
TEXTILES		decorate, design, fabric, glue, model, hand puppet, safety pin, staple, stencil, template					annotate, fabric, waistcoat, waterproof
DIGITAL WORLD				analogue, analyse, annotate, badge, computer-aided design (CAD), control, develop, digital, digital revolution, digital world, display, electronic, electronic products, fastening, feature, feedback, form,			smart, smartphone, equipment, navigation, cardinal compass, application (apps), pedometer, gps tracker, design brief, client, function, program, duplicate, replica, loop, variable, value, if statement,

				function, initiate, layers, monitor, net, opinion, point of sale, product, product design			boolean, corrode, mouldable, lightweight, sustainable design, environmentally friendly, biodegradable, recyclable, product lifecycle, product lifespan
ELECTRICAL SYSTEMS					battery, bulb, buzzer, circuit diagram, component, conductor, electrical item, electricity, electronic item, insulator, series circuit, switch, target audience, test, torch, wire	circuit component, configuration, current, develop, diy, investigate, motor, motorised, problem solve, product analysis, stable, target user	

