Year 6 – Autumn 1			
DT: Textiles – Waistcoats **Big question: How can we design and make a tote bag from recycled materials to promote sustainability?**			
Prior learning: • Year 1 – Puppets • Year 2 – Pouches • Year 3 – Cushions • Year 4 – Fastenings • Year 5 – Stuffed toys **Future learning:** • Secondary School	**Knowledge:** • To understand that it is important to design clothing with the client/target customer in mind. • To know that using a template (or clothing pattern) helps to accurately mark out a design on fabric. • To understand the importance of consistently sized stitches. • To understand the issues with fast fashion and the importance of using repurposing materials	**Skills:** • Designing a bag in accordance with a specification and design criteria to fit a specific theme. • Annotating designs. • Using a template when pinning panels onto fabric. • Marking and cutting fabric accurately, in accordance with a design. • Sewing a strong running stitch, making small, neat stitches and following the edge.	**Vocabulary:** annotate decorate design criteria fabric target customer waistcoat waterproof

		• Tying strong knots. • Decorating a bag – attaching objects using thread and adding a secure fastening. • Learning different decorative stitches. • Sewing accurately with even regularity of stitches. • Evaluating work continually as it is created.	
Critical Content Statements: • Sustainability means designing products that reduce waste and reuse materials. • Tote bags can be made from old clothes to promote upcycling. • Templates help cut fabric accurately for neat assembly.		**Common Misconceptions Pupils May Have:** • Thinking sustainability only means recycling, not reusing or upcycling. • Believing more stitching automatically makes the bag stronger.	

• Running stitch joins fabric securely when stitches are even and neat. • Reinforcing handles and seams ensures the bag is strong enough to carry weight. • Decorative elements can enhance appearance without compromising strength. • Evaluating the product includes checking durability and sustainability. • Design criteria guide decisions about function, aesthetics, and environmental impact.	• Assuming decorative features improve strength. • Thinking templates are optional for accurate cutting. • Believing any old fabric will work without considering durability. • Assuming testing is unnecessary once the bag is assembled.

Year 6 – Autumn 2			
DT: Digital world – Navigating the world Big question: How can we design and program a navigation tool that is multifunctional and sustainable?			
Prior learning: • Year 3 – Wearable technology	**Knowledge:** • To know that accelerometers can detect movement.	**Skills:** • Writing a design brief from information submitted by a client.	**Vocabulary:**

• Year 4 – Mindful moments timer • Year 5 – Monitoring devices **Future learning:** • Secondary school	• To understand that sensors can be useful in products as they mean the product can function without human input. • To know that designers write design briefs and develop design criteria to enable them to fulfil a client's request. • To know that 'multifunctional' means an object or product has more than one function. • To know that magnetometers are devices that measure the Earth's magnetic field to determine which direction you are facing.	• Developing design criteria to fulfil the client's request. • • Developing a product idea through annotated sketches. • Placing and manoeuvring 3D objects, using CAD. • Changing the properties of, or combine one or more 3D objects, using CAD. • Considering materials and their functional properties, especially those that are sustainable and recyclable (for example, cork and bamboo). • Explaining material choices and why they were chosen as part of a product concept.	application (apps) biodegradable boolean cardinal compass client corrode design brief design criteria duplicate environmentally friendly equipment function GPS tracker if statement lightweight loop

		• Programming an N,E, S,W cardinal compass. • Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool. • Developing an awareness of sustainable design. • Explaining the key functions and features of my navigation tool to the client as part of a product concept pitch. • Demonstrating a functional program as part of a product concept.	moudable navigation pedometer product lifecycle product lifespan program recyclable replica smart smartphone sustainable design value variable
Critical Content Statements: • Accelerometers detect movement; magnetometers measure magnetic fields for direction.		**Common Misconceptions Pupils May Have:** • Thinking accelerometers measure direction instead of movement.	

• Sensors enable products to function automatically without human input. • Design briefs and criteria ensure products meet client needs. • Multifunctional products combine several features for convenience. • CAD software helps create accurate 3D models for design concepts. • Sustainable materials reduce environmental impact and improve product lifecycle. • Programming a micro:bit compass requires understanding loops and conditional statements. • Debugging ensures the program runs correctly and meets design requirements.	• Believing sensors only detect temperature, not other changes. • Assuming magnetometers work without calibration. • Thinking sustainability only means using recycled materials, not considering product lifecycle. • Believing debugging is optional if the program runs once. • Assuming CAD models automatically guarantee a successful physical product.

Year 6 – Spring 1
Mechanical Systems – Automata Toys

Big question: How can we design and build an automata toy that uses cams and followers to create movement?			
Prior learning: • Spring 1 – Digital World: Navigating the world **Future learning:** • Summer 1 – Cooking and Nutrition: Come dine with me	**Knowledge:** • To know that the mechanism in an automata uses a system of cams, axles and followers. • To know that different shaped cams produce different outputs. • To know which mechanisms are working together to make a mechanical system. • To know that there are different directions of movement. • To know that mechanisms can change one type of movement to another. • To know that an automata is a hand powered mechanical toy. • To know that a cross-sectional diagram shows the inner workings of a product.	**Skills:** • Noticing wider-reaching problems or needs in the community. • Coming up with a broader range of ideas and deeper innovation, requiring pupils to think critically about their ideas' practicality and originality. • Beginning to use more complex annotated sketches, such as cross-sectional and exploded diagrams and pattern pieces in design. • Producing lists of equipment, materials and tools that they need for a task. • Selecting materials, components or ingredients based on research or user needs. • Explaining their choices, referring to their research. • Considering which equipment will work well together.	**Vocabulary:** Accurate Automata Axle Bench hook Cam Cam profile Component Cross-sectional diagram Diagram Dowel Evaluate Exploded diagram Followed Form Frame Function

		• Choosing from the known range of equipment available to them with little guidance. • Assessing risks associated with different tools and equipment. • Understanding and explaining the importance of each safety rule. • Consistently apply safety instructions. • Cutting jelutong or other harder wood with a coping saw or a tenon saw in small groups. • Cutting in a back-and-forth sawing motion where appropriate. • In supervised groups, using hot glue guns safely. • Recognising that hot glue is useful for joining materials that need a strong bond that sets quickly. • Assessing their designs against a more complex set of design criteria that includes functionality,	Housing Mechanism Store front Visual

		aesthetics, user experience, sustainability and cost. • Providing feedback that is helpful, specific and encouraging. • Incorporating feedback from peers or users to improve their product further, explaining the changes they made and the impact they had	
Critical Content Statements: • Automata toys use cams, axles, and followers to create movement. • Different shaped cams produce different types of motion. • Mechanisms can change rotary motion into linear or reciprocating motion. • Cross-sectional diagrams help explain internal workings. • Accurate cutting and assembly ensure functionality and durability. • Reinforcing joints and frames improves strength and stability. • Testing and evaluating designs ensures they meet design criteria.		**Common Misconceptions Pupils May Have:** • Thinking all cams produce the same type of movement. • Believing mechanisms only move in one direction. • Assuming decoration improves functionality. • Thinking testing is unnecessary once assembled. • Believing any material will work for cams and axles. • Assuming safety rules are optional when using saws or glue guns.	

• Feedback helps refine and improve the final product.	

Year 6 – Spring 2			
DT: Cooking and Nutrition – Come Dine with me Big question: How can we design and prepare a dish that is tasty, well-presented, and meets hygiene standards?			
Prior learning: • EYFS - Baking • Year 1 - Smoothies • Year 2 – Balanced diet • Year 3 – Eating seasonally • Year 4- Adapt a recipe • Year 5 – Developing a recipe	**Knowledge:** • That 'flavour' is how a food or drink tastes. • That many countries have 'national dishes' which are recipes associated with that country. • That 'processed food' means food that has been put through multiple changes in a factory. • That it is important to wash fruit and vegetables before eating to	**Skills:** • Writing a recipe, explaining the key steps, method and ingredients. • Including facts and drawings from research undertaken. • Following a recipe, including using the correct quantities of each ingredient. • Adapting a recipe based on research. • Working to a given timescale. • Working safely and hygienically with independence.	Vocabulary: balance bitter bridge method complement cookbook cross-contamination enhance

Future learning: • Food technology in secondary school	remove any dirt and insecticides. • What happens to a certain food before it appears on the supermarket shelf (farm to fork).	• Evaluating a recipe, considering: taste, smell, texture and origin of the food group. • Taste testing and scoring final products. • Suggesting and writing up points of improvements in productions. • Evaluating health and safety in production to minimise cross contamination.	equipment farm to fork flavours ingredients method pairing preparation recipe research salty sour storyboard sweet umami
Critical Content Statements: • Flavour combines taste and aroma to influence food appeal. • National dishes reflect cultural traditions and ingredients.		**Common Misconceptions Pupils May Have:** • Thinking appearance alone determines taste (e.g., “If it looks good, it tastes good”). • Believing processed food is always unhealthy without considering context.	

• Processed foods undergo multiple changes before reaching consumers. • Washing produce is essential for hygiene and safety. • Farm-to-fork explains how food travels from production to plate. • Recipes provide clear instructions for preparation and cooking. • Evaluating dishes includes taste, texture, smell, and presentation. • Hygiene practices prevent cross-contamination and foodborne illness.	• Assuming washing fruit and vegetables is optional. • Thinking taste testing is unnecessary for recipe improvement. • Believing adapting a recipe means completely changing it rather than improving it. • Assuming hygiene rules only apply in professional kitchens.

Year 6 – Summer 1			
DT: Structures - Playgrounds Big question: How can we design and build a playground structure that is strong, safe, and fun for users?			
Prior learning:	**Knowledge:**	**Skills:**	**Vocabulary:**

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- EYFS – Junk modelling
- EYFS – Boats
- Year 2 – Baby bears chair
- Year 4 – Pavilions
- Year 5 - Bridges

Future learning:

- Secondary school

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- To know that structures can be strengthened by manipulating materials and shapes.
- To understand what a ‘footprint plan’ is.
- To understand that in the real world, design can impact users in positive and negative ways.
- To know that a prototype is a cheap model to test a design idea.

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- Designing a playground featuring a variety of different structures, giving consideration to how the structures will be used.
- Considering effective and ineffective designs.
- Building a range of play apparatus structures drawing upon new and prior knowledge of structures.
- Measuring, marking and cutting wood to create a range of structures.
- Using a range of materials to reinforce and add decoration to structures.
- Improving a design plan based on peer evaluation.
- Testing and adapting a design to improve it as it is developed.
- Identifying what makes a successful structure.

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apparatus

design criteria

equipment

playground

landscape features

cladding

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Critical Content Statements:

- Structures can be strengthened using techniques like triangulation and reinforcement.

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Common Misconceptions Pupils May Have:

- Thinking the first design plan is always the best.
- Believing prototypes are unnecessary for testing ideas.

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• A footprint plan helps organise the layout of structures effectively. • Prototypes allow testing and refining ideas before final construction. • Accurate measuring and cutting improve stability and finish. • Reinforcing joints and frames increases strength and safety. • Design choices affect user experience and safety in real-world contexts. • Testing and adapting designs ensures functionality and durability. • Peer feedback helps improve design quality and user appeal.	• Assuming adding more glue or tape automatically makes structures stronger. • Thinking aesthetics are more important than safety and stability. • Believing all shapes provide equal strength. • Assuming testing is not needed once the structure is built.

Year 6 – Summer 2			
DT: Electrical systems – Steady hand game Big question: How can we design and build a steady hand game that is fun, functional, and fit for purpose?			
Prior learning:	**Knowledge:**	**Skills:** • Designing a steady hand game, identifying and naming the components required.	**Vocabulary:**

• Year 3 – Electrical systems – Electric poster • Year 4 – Electrical systems – Torches • Year 5 – Electrical systems – Doodlers **Future learning:** • Secondary school	• To know that 'form' means the shape and appearance of an object. • To know the difference between 'form' and 'function'. • To understand that 'fit for purpose' means that a product works how it should and is easy to use. • To know that 'form over purpose' means that a product looks good but does not work very well. • To know the importance of 'form follows function' when designing: the product must be designed primarily with the function in mind.	• Drawing a design from three different perspectives. • Generating ideas through sketching and discussion. • Modelling ideas through prototypes. • Understanding the purpose of products (toys), including what is meant by 'fit for purpose' and 'form over function'. • Constructing a stable base for a game. • Accurately cutting, folding and assembling a net. • Decorating the base of the game to a high-quality finish.	assemble battery battery pack benefit bulb bulb holder buzzer circuit circuit symbol component conductor copper design design criteria evaluation fine motor skills fit for purpose form

	• To understand the diagram perspectives ‘top view’, ‘side view’ and ‘back’.	• Making and testing a circuit. • Incorporating a circuit into a base. • Testing their own and others’ finished games, identifying what went well and making suggestions for improvement. • Gathering images and information about existing children’s toys. • Analysing a selection of existing children’s toys.	function gross motor skills insulator LED user
Critical Content Statements: • Form refers to appearance; function refers to how a product works. • A product must be fit for purpose—easy to use and functional.		**Common Misconceptions Pupils May Have:** • Confusing form with function. • Believing appearance alone determines product success. • Thinking a circuit will work without proper connections. • Assuming decoration improves functionality.	

• Form follows function: design should prioritize usability before aesthetics. • A complete circuit is essential for the game to work. • Accurate cutting and assembly ensure stability and neatness. • Testing the circuit confirms functionality before final assembly. • Evaluating designs includes considering safety, usability, and appeal. • Peer feedback helps improve design and performance.	• Believing testing is unnecessary once the game is assembled. • Assuming more components automatically make the game better.