



DESIGN & TECHNOLOGY

Design it. Make it. Improve it.

CREATING SOLUTIONS. SHAPING THE FUTURE.

Design and Technology inspires children to be creative problem solvers who design and make products that have purpose and meaning. Through an iterative process of designing, making, evaluating and improving, children develop practical skills, resilience and innovation to succeed in an ever-changing world.



LEADERSHIP



ORGANISATION



RESILIENCE



INITIATIVE



COMMUNICATION



KINDNESS

• OUR DT GOLDEN THREADS •



MECHANISMS AND MOVEMENT

Understanding how things move and using mechanisms to create movement in purposeful products.



TEXTILES

Exploring and using textile materials and techniques to design and make functional and decorative products.



FOOD

Preparing and cooking food, understanding nutrition and making healthy choices.



STRUCTURES

Designing and building strong, stable structures for a range of purposes and users.



THINK CREATIVELY • WORK SKILLFULLY • EVALUATE CAREFULLY • IMPROVE CONFIDENTLY



Year 6 Design and technology Medium Term plans

Year 6	<u>WW2</u> <u>Morse Code</u>	<u>Explorers</u> <u>Bridge Builders</u>	<u>Benin</u> <u>West African Kitchen</u>
Prior learning	• Can build and test simple electrical circuits. • Can develop design criteria for a purpose and user. • Can communicate ideas using annotated sketches and diagrams. • Can evaluate and improve a finished product.	• Knows that structures can be strengthened, stiffened and reinforced. • Can investigate and evaluate existing structures. • Can select suitable materials and construction techniques. • Can evaluate a finished structure against design criteria.	• Knows the principles of a healthy and varied diet. • Understands seasonality and where ingredients come from. • Can prepare and cook savoury dishes safely using a range of techniques. • Can design and evaluate a food product for a purpose and user.
Year 6	Linked Topic World War Two Enquiry Question How can we use electrical systems to create a Morse code communication device?	Topic: Structures – Bridge Builders Enquiry Question: How can we design and build a strong bridge for use in an extreme environment? (such as the Bailey bridge at McMurdo in Antarctica)	Topic: Cooking and Nutrition – West African Kitchen Enquiry Question: How can we design and prepare healthy West African dishes that are appealing, nutritious and culturally authentic?
Explore 1	WALT: investigate how Morse code was used during World War Two. Children: • Explore the purpose of Morse code. • Investigate communication methods used during WW2. • Examine examples of Morse code devices. • Discuss how communication technology has changed over time. Skills: • Investigates existing products. • Identifies user needs. • Makes links between technology and history. Vocabulary:	WALT: investigate and evaluate products designed for polar exploration and extreme environments. Children: • Investigate how products are designed to withstand extreme weather conditions. • Identify materials and structural features. • Consider the needs of explorers and researchers when building the temporary truss bridge at Mc Murdo Station. Skills: • Investigates existing products. • Evaluates design features. • Identifies user needs. Vocabulary: structure, environment, explorer, materials, function	WALT: investigate and evaluate West African sweet and savoury dishes. Children: • Explore traditional West African foods, including dishes such as Jollof Rice and Chin Chin. • Investigate ingredients, flavours and cooking methods. • Discuss cultural significance and traditions. • Evaluate existing dishes for taste, appearance and nutritional value. Skills: • Investigates existing products. • Evaluates food products. • Makes links between food and culture.

	Morse code, communication, signal, circuit, transmitter		Vocabulary: West Africa, cuisine, ingredients, nutrition, evaluate
Design 1	WALT: investigate electrical systems and circuits. Children: • Explore electrical components. • Build and test simple circuits. • Investigate switches, buzzers and bulbs. • Identify how circuits work. Explore programmable devices such as micro:bits. Investigate how programming can control outputs such as LEDs and buzzers. Create simple algorithms to produce Morse code signals. Skills: • Investigates electrical systems. • Builds simple circuits. • Identifies circuit components. Vocabulary: circuit, component, switch, buzzer, conductor	WALT: investigate how structures are strengthened, stiffened and reinforced. Children: • Explore different bridge designs. • Investigate how bridges support weight. • Test structures for strength and stability. • Compare different construction techniques. Skills: • Investigates structures. • Tests materials and techniques. • Identifies successful construction methods. Vocabulary: strengthen, stiffen, reinforce, stability, load	WALT: investigate where ingredients come from and understand seasonality. Children: • Research key ingredients used in West African cooking. • Investigate where ingredients are grown, reared or processed. • Explore seasonality and food production. • Consider how ingredients contribute to a healthy diet. Skills: • Researches ingredients. • Understands food provenance. • Makes informed choices. Vocabulary: seasonality, provenance, ingredients, production, nutrition
Make 1	WALT: develop design criteria for a Morse code communication device. Children: • Consider the needs of the user. • Investigate existing products. • Develop design criteria. • Generate initial ideas. Skills: • Develops design criteria. • Uses research effectively.	WALT: develop design criteria for a bridge in an extreme environment. Children: • Research the needs of explorers. • Consider environmental challenges. • Develop design criteria. • Generate initial bridge ideas. Skills: • Develops design criteria. • Uses research effectively.	WALT: develop design criteria for West African dishes. Children: • Consider the needs and preferences of Year 6 pupils. • Develop design criteria for a sweet and savoury dish. • Generate ideas and recipes. • Consider health, taste and cultural authenticity. Skills:

	Generates ideas. Vocabulary: criteria, user, purpose, function, design	Generates ideas. Vocabulary: criteria, user, purpose, design, function	- Develops design criteria. - Uses research to inform decisions. - Generates ideas. Vocabulary: criteria, user, purpose, flavour, authenticity
Make 2	WALT: communicate ideas using annotated sketches and circuit diagrams. Children: - Create annotated designs. - Draw circuit diagrams. - Select materials and components. - Justify design choices. Skills: - Uses annotated sketches. - Communicates technical ideas. - Plans effectively. Vocabulary: annotate, circuit diagram, component, connection, design	WALT: communicate ideas using annotated sketches, cross-sectional diagrams and prototypes. Children: - Create detailed annotated designs. - Draw cross-sectional and exploded diagrams. - Build simple prototypes. - Justify design decisions. Skills: - Uses annotated sketches and diagrams. - Creates prototypes. - Communicates technical ideas. Vocabulary: prototype, annotate, cross-section, exploded diagram, structure	WALT: communicate ideas using annotated diagrams and recipes. Children: - Create annotated plans for dishes. - Select ingredients and preparation methods. - Explain choices using design criteria. - Refine recipes and presentation ideas. - Use a simple computer-aided design (CAD) program to create or refine bridge designs. - Compare digital designs with hand-drawn sketches. - Use CAD to label key structural features. Skills: - Communicates ideas effectively. - Uses annotated diagrams. - Refines designs. Uses CAD to communicate design ideas. Refines designs using digital tools. Compares different methods of design communication. Vocabulary: annotate, recipe, presentation, ingredients, refine, CAD, digital design, model, refine, software

Make 3	WALT: construct a Morse code communication device. Children: • Build a functioning electrical circuit. • Incorporate a switch and signalling system. • Test and troubleshoot the device. • Refine the final product. Skills: • Constructs electrical systems. • Applies technical knowledge. • Solves problems. Vocabulary: assemble, circuit, switch, signal, troubleshoot WALT: To program and construct a Morse code communication device. Children: Create a simple program using a micro:bit. Program LEDs or a buzzer to output Morse code. Test and debug their code. Integrate the programmed component into their communication device. Skills: Uses selection and sequencing in programming. Tests and debugs code. Controls a product using a programmable component. Evaluates effectiveness.	WALT: construct a strong bridge using appropriate materials and techniques. Children: • Select suitable materials and tools. • Construct a bridge model. • Apply strengthening and reinforcing techniques. • Test and refine throughout construction. Skills: • Uses tools accurately. • Constructs a stable structure. • Applies strengthening techniques. Vocabulary: construct, reinforce, framework, stability, structure	WALT: prepare and cook West African dishes safely and hygienically. Children: • Select and prepare ingredients. • Apply a range of cooking techniques. • Follow recipes and design plans. • Prepare one sweet and one savoury dish. • Present finished products attractively. Skills: • Uses tools safely. • Applies cooking techniques accurately. • Produces high-quality food products. Vocabulary: prepare, cook, hygiene, technique, presentation
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	Vocabulary: algorithm, program, debug, input, output, micro:bit, sequence		
Reflect 1	WALT: evaluate an electrical product against design criteria. Children: • Test finished devices. • Evaluate effectiveness. • Gather peer feedback. • Suggest improvements. Skills: • Evaluates products. • Uses feedback effectively. • Reflects on design decisions. Vocabulary: evaluate, feedback, criteria, improve, effectiveness	WALT: evaluate a bridge against design criteria. Children: • Test completed bridges. • Compare outcomes with original designs. • Gather peer feedback. • Suggest improvements. Skills: • Evaluates products. • Reflects on design decisions. • Uses feedback to improve designs. Vocabulary: evaluate, feedback, criteria, improve, successful	WALT: evaluate West African dishes against design criteria. Children: • Taste and evaluate finished dishes. • Gather peer feedback. • Compare outcomes with original designs. • Suggest improvements. Skills: • Evaluates products. • Uses feedback effectively. • Reflects on design decisions. Vocabulary: evaluate, feedback, criteria, improve, successful
Assessment	Enquiry Question: How can we use electrical systems to create a Morse code communication device? Children will demonstrate understanding by: • Understanding electrical circuits. • Designing for a purpose. • Constructing a functioning electrical system. • Troubleshooting problems. • Evaluating a finished product.	Enquiry Question: How can we design and build a strong bridge for use in an extreme environment? Children will demonstrate understanding by: • Investigating structures designed for challenging environments. • Understanding how structures are strengthened and reinforced.	Enquiry Question: How can we design and prepare healthy West African dishes that are appealing, nutritious and culturally authentic? Children will demonstrate understanding by: • Investigating West African cuisine. • Understanding provenance and seasonality. • Developing design criteria. • Preparing and cooking food safely. • Evaluating finished products against design criteria.

		• Developing design criteria. • Constructing a stable bridge. • Evaluating a finished product.	
End Point	Children design, build and evaluate a Morse code communication device using electrical systems. By the end of this unit, children will understand how electrical systems can be used to communicate information. They will design, build and evaluate a Morse code communication device inspired by WW2 communication systems.	Children design, build and evaluate a bridge model that is strong, stable and suitable for use in an extreme environment. By the end of this unit, children will understand how structures are designed to meet the needs of users in extreme environments. They will apply their understanding of strengthening, stiffening and reinforcing to design, make and evaluate a bridge capable of supporting weight and remaining stable.	Children design, prepare and evaluate a West African sweet and savoury dish that are nutritious, appealing and culturally authentic. By the end of this unit, children will understand how food reflects culture and tradition. They will understand the importance of nutrition, seasonality and provenance and will design, prepare and evaluate West African dishes that meet the needs of a specific user group.
Substantive Knowledge (What children need to remember)	Children will know: • Morse code uses short and long signals to communicate messages. • Electrical circuits require a complete pathway. • Switches control the flow of electricity. • Electrical systems can be used to solve problems. • Design criteria help designers evaluate success.	Children will know: • Structures must meet the needs of their users and environment. • Bridges are designed to support loads safely. • Structures can be strengthened, stiffened and reinforced in different ways. • Materials have different functional properties. • Design criteria help designers evaluate success. • Prototypes help designers test and refine ideas.	Children will know: • West African cuisine includes a variety of sweet and savoury dishes. • Food is influenced by culture, climate and available ingredients. • Ingredients come from different sources and may be seasonal. • A healthy diet includes a balance of food groups. • Design criteria help designers create successful products. • Feedback can be used to improve products.

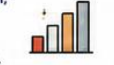
Disciplinary Knowledge (Thinking like a designer)	Children will: - Investigate electrical products. - Design for a user and purpose. - Build and test electrical systems. - Troubleshoot problems. - Evaluate and improve products.	Children will: - Investigate and evaluate existing products. - Use research to inform design decisions. - Develop and communicate ideas through sketches, diagrams and prototypes. - Select appropriate materials and construction techniques. - Test and refine products. - Evaluate outcomes against design criteria.	Children will: - Investigate and evaluate existing food products. - Research ingredients and food traditions. - Develop design criteria based on user needs. - Plan and communicate ideas effectively. - Prepare and cook food safely and hygienically. - Evaluate products and suggest improvements.
Adaptive Teaching	Support - Pre-drawn circuit diagrams. - Component guides. - Adult support during construction. - Vocabulary mats. Challenge - Create more complex Morse code systems. - Add additional components. - Explain electrical systems using technical vocabulary. - Suggest multiple improvements.	Support - Bridge templates and planning frames. - Visual examples of bridge structures. - Adult support during construction. - Vocabulary mats and labelled diagrams. - Step-by-step construction guides. Challenge - Investigate different bridge types (beam, arch, suspension). - Incorporate complex strengthening techniques. - Justify design decisions using technical vocabulary. - Explain how structural features improve stability and load-bearing capacity. - Suggest multiple improvements following evaluation.	Support - Recipe templates and planning frames. - Visual instructions and demonstrations. - Adult support during food preparation. - Pre-measured ingredients where appropriate. - Vocabulary mats. Challenge - Adapt recipes for different users or dietary requirements. - Justify ingredient choices using nutritional knowledge. - Compare West African dishes with foods from other cultures. - Suggest multiple improvements based on evaluation. - Consider presentation and authenticity in greater depth.
Assessment for Learning	Throughout the unit, teachers will assess understanding through: - Circuit diagrams. - Discussion and questioning. - Observation of construction. - Testing activities.	Throughout the unit, teachers will assess understanding through: - Design sketches and prototypes. - Discussion and questioning. - Observation of construction techniques. - Structure testing activities. - Product evaluations.	Throughout the unit, teachers will assess understanding through: - Design diagrams and recipe plans. - Discussion and questioning. - Observation of food preparation skills. - Product evaluations.

	• Product evaluations. • Reflection discussions.	• Reflection discussions. • Retrieval of key vocabulary and knowledge.	• Reflection activities. • Retrieval of key vocabulary and knowledge.
National Curriculum coverage	Pupils should be taught to: • Apply understanding of electrical systems in products. • Generate, develop and communicate ideas. • Select and use a wider range of tools and materials. • Evaluate products against design criteria. Apply their understanding of computing to program, monitor and control their products.	Pupils should be taught to: • Use research to develop design criteria. • Generate, develop and communicate ideas through annotated sketches, prototypes and diagrams. • Select from and use a wider range of tools and materials accurately. • Apply understanding of how to strengthen, stiffen and reinforce more complex structures. • Evaluate products against design criteria.	Pupils should be taught to: • Understand and apply the principles of a healthy and varied diet. • Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. • Understand seasonality and know where and how a variety of ingredients are grown, reared, caught and processed. • Generate, develop and communicate ideas through discussion and annotated diagrams. • Evaluate existing products and their own ideas and products.

DT PROGRESSION TIMELINE EYFS-YEAR 6

Building knowledge, skills and creativity through design, make, evaluate and improve.



OUR JOURNEY	EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
 EXPLORING & UNDERSTANDING ↓	Explore materials, foods and existing products through play and discussion. 	Explore a range of products and materials. Talk about how and why things are made. 	Explore more complex products and ingredients. Identify features and how they work. 	Research products and ingredients in depth. Understand purpose and user. 	Investigate how products work and are made. Understand systems and structures. 	Analyse products in detail. Consider function, aesthetics, sustainability and user needs. 	Investigate, research and question widely. Understand innovation and impact. 
 DESIGNING ↓	Generate simple ideas and make choices with support. Begin to plan. 	Design purposeful products for a specific user using simple design criteria. 	Develop ideas and designs. Choose materials and explain choices. 	Create detailed plans and sketches with annotations. Use design criteria. 	Use research to inform designs. Create prototypes and refine ideas. 	Produce detailed designs and plans. Consider function, form and sustainability. 	Develop innovative designs with clear purpose. Plan using advanced tools. 
 MAKING ↓	Use tools and materials safely to make simple models and food products. 	Make products following a plan. Use a range of tools and materials. 	Use tools and techniques to make quality products. 	Apply skills and techniques with increasing independence. 	Use a wider range of tools and techniques with accuracy. 	Work confidently and accurately. Combine techniques and select appropriate materials. 	Use advanced techniques and technology to make high-quality products. 
 EVALUATING ↓	Talk about what they like and dislike. Begin to suggest changes. 	Evaluate products against design criteria. Suggest simple improvements. 	Evaluate against criteria and user needs. Identify what worked well. 	Test and evaluate products. Make improvements based on feedback. 	Evaluate function, quality and appearance. Improve designs. 	Critically evaluate products. Consider sustainability and impact. Refine ideas. 	Evaluate thoroughly and make considered improvements. Reflect on learning. 
 EVERY CHILD WILL...	Be curious, explore and enjoy using tools and materials safely. 	Design and make simple products for a purpose. 	Apply skills to create functional and appealing products. 	Test their knowledge to solve problems and create quality products. 	Design and make products that are fit for purpose and well made. 	Work confidently and creatively to design innovative products with purpose. 	Become independent, creative problem solvers and critical evaluators. 

OUR DT GOLDEN THREADS



MECHANISMS AND MOVEMENT

Understanding how things move and using mechanisms to create purposeful products.



TEXTILES

Exploring and using fabrics and techniques to design and make functional and decorative products.



FOOD

Preparing and cooking a variety of dishes. Understanding nutrition, seasonality and where food comes from.



STRUCTURES

Designing and building strong, stable structures for a range of purposes and users.



THINK CREATIVELY



WORK SKILLFULLY



COMMUNICATE IDEAS



EVALUATE CAREFULLY



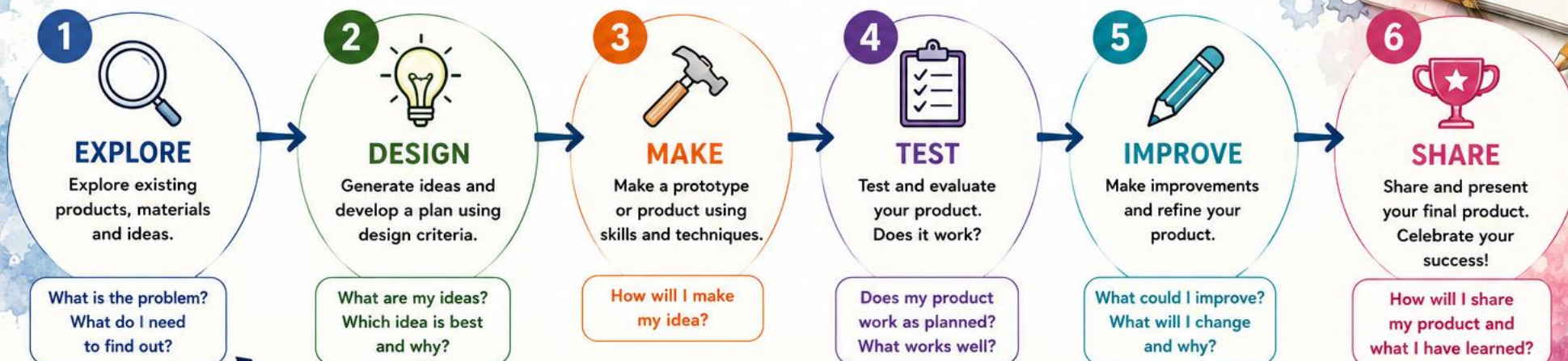
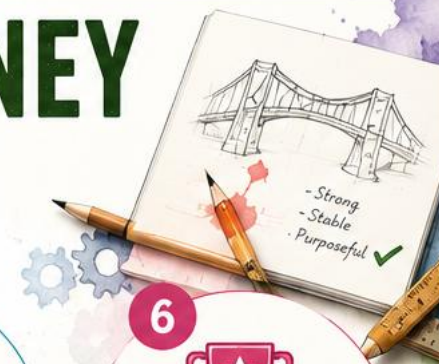
IMPROVE CONFIDENTLY

**DESIGN IT.
MAKE IT.
IMPROVE IT.**

DT DESIGN PROCESS JOURNEY

Design it. Make it. Improve it.

WE ARE DESIGNERS • WE ARE MAKERS • WE SOLVE PROBLEMS



DESIGN IS AN ITERATIVE PROCESS – WE KEEP IMPROVING!



MECHANISMS AND MOVEMENT

Understanding how things move and using mechanisms to create movement in purposeful products.

Examples: levers, linkages, gears, wheels and axles, electrical systems.



TEXTILES

Exploring and using fabrics and techniques to design and make functional and decorative products.

Examples: sewing, stitching, joining, embellishing, finishing.



FOOD

Preparing and cooking a variety of dishes. Understanding nutrition, seasonality and where food comes from.

Examples: cooking techniques, flavour, presentation, hygiene.



STRUCTURES

Designing and building strong, stable structures for a range of purposes and users.

Examples: frameworks, shells, bridges, buildings, 3D forms.

AS DESIGNERS
AND MAKERS
WE...



THINK CREATIVELY

We explore ideas and solve problems.



WORK SKILLFULLY

We use the right tools, materials and techniques.



COMMUNICATE IDEAS

We share our thoughts and listen to others.



EVALUATE CAREFULLY

We look at what works well and what could improve.



IMPROVE CONFIDENTLY

We learn from mistakes and keep improving.



EVERY DESIGN STARTS WITH AN IDEA. EVERY PRODUCT TELLS A STORY. EVERY IMPROVEMENT MAKES US BETTER.

