LKS2 Design and Technology Detailed Progression of Skills and Knowledge Year B

Mechanical Systems: Pneumatic Toys

Year 3 D&T Unit: Pupils learn how pneumatic systems use air pressure to create movement in mechanisms. They design, make, and evaluate a moving pneumatic toy.

Prior learning: Mechanisms: Making a moving monster
Suggested next steps: Mechanical cars

Lesson	Learning Objectives	Core Knowledge	Core Skills	Key Vocabulary
1: Exploring pneumatics	To explore how pneumatic systems create movement within mechanisms.	Know what pneumatics are and how air pressure can cause movement.	Explore pneumatic systems in familiar products.	pneumatic, air, pressure, movement
2: Drawing diagrams	To use different types of diagrams to summarise information.	Understand that diagrams can show how mechanisms work.	Draw labelled diagrams of pneumatic mechanisms.	diagram, label, sketch, mechanism
3: Designing a pneumatic toy	To design a toy that uses a pneumatic system.	Know how to create design criteria and sketches.	Plan and label a toy design including moving parts.	design, criteria, plan, movement
4: Making a pneumatic toy	To create a pneumatic system for a moving toy.	Understand how to assemble and join components securely.	Build and test a working pneumatic mechanism.	assemble, join, tube, syringe, air
5: Finishing the toy	To test and finalise ideas against design criteria.	Know how to evaluate design success and suggest improvements.	Evaluate final product against criteria and make refinements.	evaluate, improve, feedback

Electrical Systems: Torches

Year 4 D&T Unit: Pupils investigate electrical systems and circuits, learning to design and assemble a functioning torch. They evaluate electrical products and test their own designs.

Prior learning: Electrical systems: Electric poster
Suggested next steps: Electrical systems: Doodlers

Lesson	Learning Objectives	Core Knowledge	Core Skills	Key Vocabulary
1: Electrical products	To learn about electrical items and how they work.	Know that electrical products use components such as batteries, wires, and bulbs.	Identify electrical components and explain their function.	battery, bulb, wire, electricity
2: Evaluating torches	To analyse and evaluate electrical products.	Understand features of successful torch designs.	Test existing torches and discuss design and function.	evaluate, test, torch, component
3: Torch design	To design a product to fit a set of specific user needs.	Know how to apply design criteria to an electrical system.	Create a labelled design for a torch, including switch placement.	design, circuit, switch, criteria
4: Torch assembly	To make and evaluate a torch.	Understand how to safely assemble and test a simple circuit.	Assemble a torch and evaluate it against design criteria.	assemble, test, insulator, conductor

Digital World: Wearable Technology

Year 3 D&T Unit: Pupils learn about the digital revolution and use programming and design skills to create wearable technology. They use virtual coding to design and evaluate a product with a digital output.

Prior learning: Electrical systems: Electric poster
Suggested next steps: Digital world: Mindful moments timer

Lesson	Learning Objectives	Core Knowledge	Core Skills	Key Vocabulary
1: Evaluating wearable technology	To research and evaluate existing products.	Know examples of wearable technology and their purpose.	Evaluate existing wearable devices and discuss features.	wearable, digital, technology, product
2: Light-up wearables	To develop design criteria.	Understand the importance of defining purpose and user needs.	Set design criteria for a wearable product.	design criteria, user, purpose, digital
3: Programming wearable technology	To use code to program and control a product.	Know how to use coding software to control LEDs.	Write simple programs to control digital outputs.	program, code, LED, micro:bit
4: Product concept	To develop and communicate ideas.	Know how annotated sketches show design ideas.	Create annotated diagrams of product concepts.	annotate, sketch, diagram, concept
5: Point of sale displays	To develop ideas through computer-aided design.	Understand how CAD helps to plan product presentation.	Create simple CAD models for packaging or display.	CAD, display, design, model
6: Focus groups	To improve a design based on feedback.	Know that feedback improves final product designs.	Collect and respond to feedback to refine product ideas.	feedback, evaluate, improvement