UKS2 – Lesson Plan 1 – **D.T.**

Can we design a product that uses a renewable energy source?

Aim:	Key Words:	Preparation:
To understand how renewable energy works and apply this knowledge by designing a simple product or model that could use renewable energy to function.	• renewable, solar, wind, energy, power, design, circuit, model, generate, sustainable, product	• Cardboard, lolly sticks, straws, plastic bottles, string, paper • Small motors, wires, batteries, solar panels (optional if available) • Examples/images of wind turbines, solar toys, or water wheels • Design sheets, pencils, rulers • Video clips explaining types of renewable energy

Prior Learning: Children have learned about different energy sources (fossil fuels vs. renewable) and have explored simple circuits or mechanical systems.

WC / PT	<u>Warm-up:</u> Show short video clips of different renewable energy types: solar panels, wind turbines, and hydroelectric dams. Ask: • What powers these machines? • Why might renewable energy be important for the future? Explain that engineers and designers use science to solve real problems — today, they'll be **young engineers** doing the same!	0-5 mins
WC	<u>Main Teach:</u> Introduce the science: • **Renewable energy** comes from sources that won't run out (sun, wind, water). • It can power lights, vehicles, or even whole buildings. • Some toys and gadgets are now solar-powered or wind-powered. Introduce the D.T. challenge: 🔧 **Can you design a product that uses a renewable energy source?** Go through the design criteria: • Must show what renewable source it uses • Should solve a problem or serve a purpose (e.g. lighting a path, turning a fan) • Include labels and explanations	5-10 mins

I / S	Activity: **Design and Model a Renewable Energy Product** Children choose one type of renewable energy and design a product that could use it. Examples: • A solar-powered toy car • A wind-powered fan • A water-powered wheel to turn a small drum Steps: 1. Sketch and label the design 2. Identify which energy source powers it 3. Build a model (optional — paper prototype or 3D)	10-30 mins
I	Extension Challenge: Children add **a simple electrical circuit** if materials allow, or use symbols to show how electricity would flow. Optional: Create an advertisement or pitch to "sell" their invention to the class, explaining why it's sustainable.	30-35 mins
WC	Plenary: Class gallery walk or mini-pitch session: • What was the biggest design challenge? • What made your idea environmentally friendly? • Could this invention help people in the real world? Create a wall display titled: **"Future Energy Designers"**	35-40 mins

WC – Whole Class PT – Partner Talk I – Independent S - Support

Challenge A	**English Link:** • Write an explanation text: *"How my invention works"* using technical vocabulary.
Challenge B	**Geography Link:** • Match each type of renewable energy to a country or region where it's most useful (e.g. solar power in hot climates).