

CYCLE A KS3	
Term 5- Enterprise – leave no trace, sustainability	
Overview- ENTERPRISE (DT)- Enterprise – leave no trace, sustainability. Can you create a water cleaning device that can float whilst collecting rubbish? How would you then use your pilot model to pitch for future investment?	
KS2 Prior Knowledge	KS3 National Curriculum Objectives
KS2 DT objectives • The design process: researching, generating ideas, creating a specification, prototyping, testing, and evaluating. • Sketching and annotation: drawing ideas with clear labels. • Materials knowledge: understanding basic material properties (strength, flexibility, durability, water-resistance, sustainability). • Simple mechanical systems: pulleys, gears, levers, wheels, and axles. KS2 Science objectives • Forces and motion: Push/pull, friction, water resistance; Buoyancy for floating devices • Properties of materials: Plastic vs metal vs wood; Waterproofing; Structural stability • Environmental science basics: Ecosystems and habitats; Pollution types (plastics, chemical, organic); Impact of pollution on wildlife	Design • use research and exploration, such as the study of different cultures, to identify and understand user needs • identify and solve their own design problems and understand how to reformulate problems given to them • develop specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations • use a variety of approaches [for example, biomimicry and user-centred design], to generate creative ideas and avoid stereotypical responses • develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations and computer-based tools Make • select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture • select from and use a wider, more complex range of materials, components and ingredients, taking into account their properties Evaluate • analyse the work of past and present professionals and others to develop and broaden their understanding • investigate new and emerging technologies • test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups • understand developments in design and technology, its impact on individuals, society and the environment, and the responsibilities of designers, engineers and technologists Technical knowledge

	• understand and use the properties of materials and the performance of structural elements to achieve functioning solutions • understand how more advanced mechanical systems used in their products enable changes in movement and force • understand how more advanced electrical and electronic systems can be powered and used in their products [for example, circuits with heat, light, sound and movement as inputs and outputs] • apply computing and use electronics to embed intelligence in products that respond to inputs [for example, sensors], and control outputs [for example, actuators], using programmable components [for example, microcontrollers].
Key Skills	
Sustainability & Environmental factors: • Plastic pollution in rivers • Impact on ecosystems • Renewable power sources (solar-powered skimmers) • Ethical design choices • “Leave No Trace” environmental ethos Enterprise Links: • Identify target customers (local councils, environmental groups) • Conduct basic market research • Create a brand name and logo • Calculate estimated production costs • Pitch their idea to an audience • Create promotional materials	
PSHE Links	Key Vocabulary
	Cross Curricular links (DT/RE)

Environmental Responsibility • Understanding human impact on rivers and ecosystems • Exploring sustainable solutions to pollution • Considering ethical design and material choices • Developing awareness of global environmental issues Safety Awareness • Safe handling of tools and materials • Risk assessment in design and prototyping • Awareness of water safety if testing models in local rivers Collaboration & Teamwork • Working in groups to design, test, and refine the machine • Negotiating roles and responsibilities • Listening to and respecting others' ideas Enterprise & Ethical Awareness • Considering sustainability and ethical implications of design choices • Awareness of how products can impact society and environment • Decision-making around cost, functionality, and environmental impact	 The image shows a 3x4 grid of icons with labels below them. Row 1: pollution (oil spill), prototype (circuit board), design (pencil and paper), make (wrench and screwdriver). Row 2: evaluate (gears and arrows), Buoyancy (object in water), material (blue cloth), Conservation (recycling symbol). Row 3: budget (calculator and coins), brand (person with tag), logo (tag with 'X'), profit (money bag).	Geography Understanding river systems: • Flow, banks, sources, mouth • Upper, middle, lower courses • Causes and impact of river pollution: • Littering, industrial, agricultural • Awareness of local and global environmental issues • Case studies: e.g., River Thames, River Severn Science • Forces and motion: water flow, drag, buoyancy • Properties of materials: waterproofing, durability, strength • Environmental science: ecosystems, pollution effects, sustainability • Energy: renewable sources for powered prototypes
Quality Texts/Resources		
https://kids.nationalgeographic.com/books/article/water-wonders https://remedies-for-ocean.eu/the-remedies-innovations-river-cleaning-system/ https://www.danriver.org/content/danriver/uploads/keeping_it_clean_binder.pdf https://www.fiverchallenge.org.uk/		

