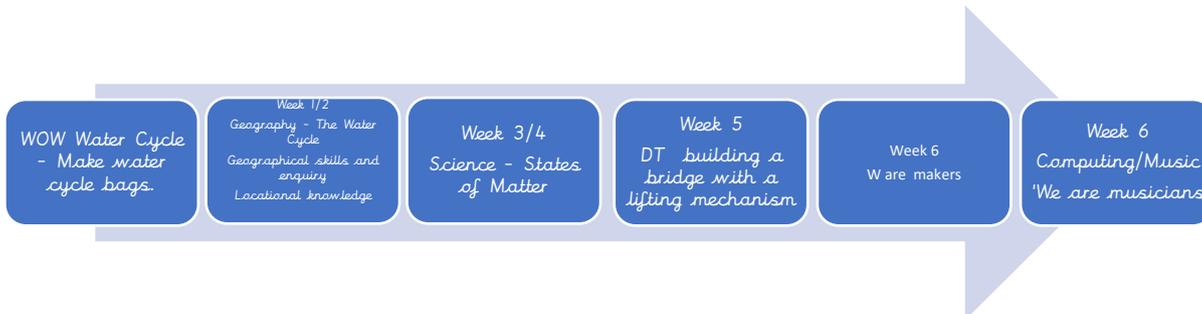# Year 4 Science & Geography based unit – Wonderful Water! (7 weeks)

Overview of unit: We will start with learning about different states of matter in science. We will then link this learning to finding out about the water cycle in Geography. This will lead on to us investigating the key aspects of the distribution of natural resources, focusing on water. In DT, the children will focus on textiles, learning how to use waterproof materials to make an item of clothing for wet weather. Next the children create an animation using Scratch linked to water, for example a waterfall or water park. Finally, the children compose music linked to water.

WOW Water Cycle – Make water cycle bags.	Week 1/2 Geography – The Water Cycle Geographical skills and enquiry Locational knowledge	Week 3/4 Science – States of Matter	Week 5 DT building a bridge with a lifting mechanism	Week 6 W are makers	Week 6 Computing/Music 'We are musicians

Science skills for this unit

Thinking scientifically skills
- Ask relevant questions.
- Set up simple, practical enquiries and comparative and fair tests.
- Make accurate measurements using standard units, using a range of equipment, e.g. thermometers and data loggers.
- Record findings using simple scientific language, drawings and tables
- Report on findings from enquiries, including oral explanations

Use results to draw simple conclusions and suggest improvements, new questions and predictions for setting up further tests.

Science Big Questions:

Can I group the materials and objects into solids, liquids and gaes? (Identifying and classifying)

Can I find out how the water cycle works?

(Research using secondary sources)

What happens to the rate of a reaction when it is heated?

(Observing over time)

(Comparative and fair testing)

Knowledge for this unit
- Compare and group materials together, according to whether they are solids, liquids or gases.
- Observe that some materials change state when they are heated or cooled, and measure the temperature at which this happens in degrees Celsius (°C).
- Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.
- Know that materials come in three forms: solid, liquid and gas and now they can change between states by melting, evaporating, dissolving, freezing and condensing.

Previous Knowledge

Everyday materials – Y1
- Identify and name a variety of everyday materials including wood, plastic, glass, metal, water, and rock.
- Compare and group together a variety of everyday materials on the basis on their simple physical properties.

Use of everyday materials – Y2
- Find out how the shapes of some materials can be changed by squashing, bending, twisting, and stretching.

Key vocabulary
- Observe
- Solid
- Liquid
- Gas
- Degrees Celsius
- Heated
- Cooled
- Evaporation
- Condensation

Geography skills for this unit

Describe and understand how the water cycle works.
Sketching maps adding in key water features around the world.
Geographical skills and enquiry
- Use non-fiction books, stories, atlases, pictures/photos, satellite images & aerial photographs and the internet as sources of information.
- Investigate places and themes at more than one scale. Collect and record evidence wit some support. Analyse evidence and draw conclusions e.g. make comparisons between locations using pictures, photos and maps
- Make simple scale drawing. Use some basic symbols and key (including the use of simplified ordnance survey maps).

Locational knowledge
- Begin to understand the similarities and differences of areas of the UK.

Fieldwork skills
- Fieldsketching
- Photography
- Video/Audio recording

Perspective
- Draw a sketch map from a high view point.
- Use field work to observe, measure, record and present the human and physical features in the local area using a range of methods, including sketch maps, plans and graphs, and digital technologies.

Knowledge for this unit

- Knowing some key water features around the UK and the wider world (e.g. River Thames, Niagara Falls)

Previous Knowledge
Geographical skills and enquiry – Y3
- Begin to collect and record evidence. Analyse evidence and begin to draw conclusions to make comparisons between two locations (not your school grounds, two different places) using photos/pictures, temperatures in different locations
- Try to make a map of described short route experiences, with features in the correct order. Use simple grid references e.g. A1, B3 and symbols in a key
Locational knowledge – Y3
- Identify longest rivers in the world, largest deserts, and highest mountains. Compare with the UK.

Vocabulary
- Maps
- Atlases
- Run-off

DT skills for this unit

Designing
- Gather own design criteria collaboratively and through discussion, focusing on the needs of the user and the purpose of the product.

- Develop realistic and appropriate ideas through the analysis of existing products using annotated sketches and prototypes to model and communicate ideas.

Making
- Plan the stages of making.

- Select and use a range of appropriate tools and equipment with some accuracy e.g. cutting, shaping, joining and finishing.

- Select from and use fabrics, materials and components, including construction materials and electrical components according to their functional properties and aesthetic qualities

Evaluating
- Understand how a key event/individual has influenced the development of the chosen product

and/or fabric.

- Investigate a range products relevant to the project e.g. 3-D textiles and battery-powered products.

- Evaluate and test their ideas and products against their own design criteria and with the intended user and identify the strengths and areas for improvement in their work.

- Take into account others' views when evaluating their work.

Knowledge for this unit	Previous Knowledge
• Understand types of lifting mechanism • Consider the qualities of materials for strength	Textiles – Y3 • Generate ideas and design a product using templates and mock-ups • Use appropriate tools with some accuracy to cut and join products Vocabulary • Template • Product • Components • Prototype • Design brief

Computing skills for this unit

-create a repeating percussion rhythm
-play music using virtual instruments
-compose or edit tunes using the piano roll (pitch and duration) tool
-perform electronic music using prerecorded loops, and create their own loops
-create a multi-track composition or performance using multiple instruments
-give feedback to others on their compositions and performances.
-know what to do if they come across any inappropriate content when looking on the web
-understand what illegal downloading of audio files is

Knowledge for this unit	Previous Knowledge
• Creating rhythmic percussion by using virtual instruments • Performing to an audience	Previous presentation/ performances in Year 4 Vocabulary Beat sequencer Live loops Sample Stave Touch instrument Voice

Music skills for this unit

Can they use notations to record and interpret sequences of notes?
- Can they use notations to record compositions in a small group or on their own? • Can they use notation in a performance?
- Can they show how they can use dynamics to provide contrast?

Knowledge for this unit	Previous Knowledge
• Know the meaning of the following terminology: duration, timbre, pitch, beat, tempo, dynamics, texture, structure to describe music.	Can they create repeated patterns using a range of instruments? • Can they combine different sounds to create a specific mood or feeling? • Do they understand how the use of tempo can provide contrast within a piece of music? • Can they begin to read and write musical notation? • Can they effectively choose, order, combine and control sounds to create different textures and moods? • Can they use silent beats for effect (rests)? • Can they combine different inter-related dimensions of music (e.g. tempo, dynamics, timbre) in their composition?

Computing skills for this unit

-about the input – process – output model of computation

-about the inputs and outputs available on a BBC micro:bit

-to program using the MakeCode block- based environment

-to test and debug programs they write, using an on-screen simulator and the micro:bit

-how to convert and transfer a program written on screen to the micro:bit.

-independently, and with regard for e-safety, select and use appropriate communication tools to solve problems by collaborating and communicating with others within and beyond school

Knowledge for this unit	Previous Knowledge
• understand what an input and an output is • -use a micro:bit and code it effectively	Year 3 coding -plan and create an algorithm for an animated scene in the form of a storyboard -write a program in Scratch to create the animation, including characters, dialogue, costumes, backdrops and sound -review their animation programs and correct mistakes Key vocabulary Bluetooth LED MakeCode Object Code Runtime Simulator