



THE PUPIL PIPELINE RESOURCES



KS2: GEOGRAPHY AND DESIGN & TECHNOLOGY

WHAT IS THE PUPIL PIPELINE?



WaterAid provides clean water, sanitation and hygiene education to some of the world's poorest people. Just one of the communities WaterAid will be reaching is a primary school near **Finote Selam, Ethiopia**. The school and the surrounding village have no access to water. There's no working toilets in the school building either.

The Pupil Pipeline is a fun and educational water delivery challenge for schools that will help bring clean water to communities around the world, like Finote Selam's primary school.

The challenge? Pupils need to work together to transport water with as little waste as possible. 10 litres, over 50 meters, within 20 minutes, without anyone leaving their spot! Anything goes: buckets, bottles, jars, cups or even wellies.

These activities are intended to be carried out across several lessons and at a pace suited to your class. The activities introduce the difficulties of going to school in an environment where there is no safe water available nearby, and simple solutions such as collecting rainwater. The children will have the opportunity to make their own rain gauges in which they can collect water to track how much rainfall their school receives. This activity can also be used as part of your school's eco club activities.

RAINWATER HARVESTING - AIMS



- To explain the difference between weather and climate
- To understand some of the impacts of climate change
- To reflect on the impact of climate change in Ethiopia
- To consider methods WaterAid uses to help people deal with drought caused by climate change
- To create rain gauges and decide where to place them in order to collect rain water
- To recycle the rain water for other purposes such as watering plants or growing vegetables



KEYWORDS

- Weather
- Climate
- Climate change
- Rain gauge

RESOURCES AND MATERIALS

- Clear plastic bottles (2 litres)
- Ruler
- Paper clips
- Scissors
- Sellotape
- Plasticene
- Ethiopia and climate change sheet
- Tirusew's story

CURRICULUM LINKS

KS2 Geography

Human and physical geography Describe and understand key aspects of human geography, including: types of settlement and land use, economic activity including trade links, and the distribution of natural resources including energy, food, minerals and water.

Design & Technology:

Design: Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups; generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.

Make: Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately; select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities.

Evaluate: Investigate and analyse a range of existing products; evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.

Technical knowledge: Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.

ACTIVITY: WEATHER AND CLIMATE

Weather and climate starter activity:

- Ask pupils to match the keyword with the correct definition.
- Display the keywords and definitions on the board:

Weather: the day to day conditions of the Earth's atmosphere

Climate: weather patterns over a long period of time

- **Think, pair, share:** Ask pupils to name as many **types of weather** as they can think of. Tell them to think silently for 30 seconds, then pair up and discuss with their partner for one minute and then be ready to share to the class.
- In pairs, ask pupils to **describe the weather** outside. After a few minutes, invite the pupils to feedback to the class. Then construct a short piece of writing together (on the whiteboard so everyone can see) to describe the weather today. You may wish to ask the pupils to write this in their books.
- **Highlight the differences between weather and climate**, and give examples to explain this e.g. the weather in the UK might be sunny one day, then rainy and then windy. But the overall climate is temperate, which means we have cool, wet winters and warm, wet summers.

- **Hands up:** Ask pupils if they have heard of 'climate change' before. What does it mean? Display the definition of climate change on the board.
- **Climate change:** long-term change in the climate in a particular place or across the whole world.
- Explain that climate change means that the **weather across the world is changing**. Because of climate change, some places get more rainfall, and some places get less rainfall. It can also mean that some places are warmer than they used to be. Ask pupils if they can think of how climate change has impacted the **UK**, e.g. hotter summers, less rainfall, flooding.
- Ask pupils to reflect on the impact that climate change having on places like **Ethiopia**. Discuss this as a class and refer to the **Ethiopia and climate change sheet** (page 5) for examples.
- Explain that the charity **WaterAid** works in Ethiopia (and 27 other countries) to help ensure that people have access to clean drinking water all year round, even when there isn't enough rainfall. They do this by helping people to track the amount of rain that falls over the year so that people are able to monitor how much water they have.
- There are different methods to **measure the amount of rainfall** – ask pupils if they can think of ways to measure rainfall?

ACTIVITY: RAIN GAUGES



- Explain to pupils that a **rain gauge** is a piece of equipment that measures the amount of rain that falls each day.
- Rain gauges are used when investigating **how the climate is changing**: they can be used to measure the amount of rain, and make note of any changes over time (e.g. more rainfall or less rainfall).
- Tell the class that they will be **making their own rain gauges!**
- Pupils can either make their rain gauges individually or in pairs.
- Give out the materials and go through the **instructions (page 4)** with the whole class.

Display the instructions on the board while they are making their rain gauges.

- Once pupils have made their rain gauges, discuss with the class where they think the best place will be to put them, to ensure that they collect rain.
- If possible take a walk outside to talk about **suitable positions**. Once this has been decided, pupils should leave their rain gauges and check on them as specified by their teacher.
- Explain to the pupils that they will **record** the amount of rain that falls over time.

OPTIONAL TASKS



- Create a **bar chart** showing the amount of rainfall and discuss any changes. You may wish to compare your data with local rainfall data from previous years.
- Ask pupils to consider all the **ways** that the rainwater they've collected in their rain gauges could be used.

PLENARY



- Ask the pupils to reflect on their feelings about climate change. Tell them to consider how climate change impact countries around the world differently and ask them to consider whether this is fair.
- Pupils can record their reflections in a drawing, a poem, a statement or even a slogan.
- Challenge them to think about how raising money to support charities like WaterAid will help other children around the world, like in Ethiopia.
- You may like to display these reflections in the classroom or around the school during your Pupil Pipeline events.

RAIN GAUGE INSTRUCTIONS

In some places around the world, climate change is affecting the amount of rain that is falling. This means that there could be more rainfall than normal or less rainfall than normal at different points of the year.

Scientists monitor changes in rainfall using equipment such as a rain gauge. A rain gauge is used to collect and measure the rainfall to see if there is more than usual, or less.

Follow the instructions below to make your own rain gauge!

MATERIALS

- 2ltr clear plastic water bottle
- Ruler
- Paper clips
- Scissors
- Sellotape
- Plasticene

INSTRUCTIONS

- Cut the top off your water bottle, about $\frac{1}{4}$ of the way down.
- Put plasticene in the bottom half of the water bottle to level it out, making the base of the rain gauge flat.
- Turn the top of the bottle upside down and put it inside the bottom part of the bottle. You can secure this with paperclips to keep it in place.
- Attach a ruler to the outside of the bottle using sellotape. Make sure the 'zero' is level with the plasticine at the bottom.
- Find a suitable location for your rain gauge outside. Leave it there to collect rain!
- Check your rain gauge daily to see how many mm of rainfall there has been.
- Record your data and then empty your rain gauge ready to start collecting again.

ETHIOPIA AND CLIMATE CHANGE

The climate in Ethiopia is changing

- Overall, the climate in Ethiopia is mostly hot and dry. Rainfall can be unpredictable, and there is a history of drought in the country. A drought means there has been less rainfall than usual for a long time. During a drought, there may not be enough water for drinking, farming, washing and cleaning.
- Something is happening that is making the weather even more unpredictable. We call this climate change.
- Climate change can mean that at some points of the year, there is a lot more rain than normal which can cause flooding. The flood water can damage people's homes and farmers' crops and can also contaminate drinking water.
- However, at other points of the year, climate change can mean that there isn't enough rain which causes a drought. Droughts are becoming even more common in Ethiopia because of climate change, meaning that the people who live in Ethiopia don't have enough water.

How do we know climate change is happening?

There is a lot of evidence to show that climate change is affecting Ethiopia. For example:

- There have been more droughts and floods
- The weather is warmer than it used to be
- There is more rainfall than there used to be

Why is the Pupil Pipeline important?

Read Tirusew's story. She's 12 and lives in Finote Selam, Ethiopia. Her school doesn't have access to drinking water, handwashing facilities or working toilets. Children in her school miss out on classes because they can't spend the school day without drinking water.

WaterAid is working in the world's poorest communities, like Tirusews, providing water systems that can withstand the changing climate. By joining the Pupil Pipeline, our school will help bring clean water, decent toilets and good hygiene to communities like Tirusew's, so that children can stay healthy and go to school.