



URBAN WORLD ACTIVITY

SAVING
WATER



Jane Goodall's
roots&shoots



SAVING WATER: DO AN AUDIT, MAKE A PLEDGE!

This activity is all about saving water. Abu Dhabi has one of the highest rates of water consumption in the world, estimated at 550 litres of water per person per day compared with 85 litres in Jordan, a country with a similar climate. The current usage of groundwater reservoirs is about 15 times more than the natural recharge rates, so the difference has to be made up using desalination plants which use a lot of energy (contributing to climate change) and discharge very salty water into the sea (which is bad for marine life).

IN THIS ACTIVITY YOU AND YOUR STUDENTS WILL:

- ▶ Think about where water is used and wasted around the home.
- ▶ Design a Home Water Usage Questionnaire.
- ▶ Fill in the questionnaire for their own home and compare results back in the classroom.
- ▶ Make a Water Saving Pledge to display on a poster in the classroom.

OBJECTIVES

Carrying out this activity will help students see how much water is used every day by people in the UAE and how this impacts on the environment. They will also learn how they and their families could save water at home. But we do not just want talk, we want action! Every student will make a pledge to change one thing about how they personally use water, so as to reduce their family's water use.

WHAT DO I NEED TO MAKE IT WORK?

You'll need a printer/copier to make copies of the questionnaire, plus paper and art materials to make and decorate a poster for display in the classroom. Alternatively you can use the 'Mission Tracker' poster and activity cut-outs available on our website (type in this link to go straight there: goo.gl/tAkHVS).

WHAT THINGS WILL MY STUDENTS CREATE?

- ▶ Home Water Usage Questionnaires to print/write out and take home
- ▶ A 'Save Water!' Pledge Poster for the classroom, showing a water waste reduction commitment from each student.

GETTING STARTED – BACKGROUND READING

Here are some useful references to background information you can use in the course of this activity. Just type the short link into your web browser's address bar to open the website.

- ▶ goo.gl/yaR9Zo – Waterwise water saving tips
- ▶ goo.gl/LmELYP – Water scarcity and water security issues getting more urgent
- ▶ goo.gl/7gMa2s – Abu Dhabi's water conservation plans
- ▶ goo.gl/741xOX – 100+ Ways to conserve water
- ▶ goo.gl/QVbb8D – UAE per capita water consumption 550 litres per day
- ▶ goo.gl/CJZ2k2 – Abu Dhabi takes steps to reduce water consumption

WATER USAGE AT HOME

The first part of the classroom activity is to discuss with your students how water is used around the home, and where it is wasted.

STEP 1 – WHAT DO WE USE WATER FOR?

Water use at home is mainly used for washing. Get your students to think about all the different things they wash and how frequently. For personal washing do they use baths or showers? Are dirty dishes washed by hand or in a dishwasher (they may be surprised to hear that a full dishwasher uses less water than washing the same dishes by hand)? How often does the washing machine get used? What else do they and their families use water for at home? Some examples are:

- ▶ Lawns & gardens. How often do they need water?
- ▶ Washing cars.
- ▶ Cooking and making drinks.
- ▶ Toilet flushing.

STEP 2 – HOW MUCH WATER DO YOU USE AT HOME?

With younger students or if short of time you might want to skip this step and move on to step 3.

Now you have a list of where water is used at home, try and make some estimates of how much water is used. The background reading links at the start of this activity will help them here, as will goo.gl/f54Zte (type the short link into your browser's address bar to access the resource). Some other useful figures:

- ▶ Taking a (conventional) shower uses an average of around 45 litres of water, compared to 80 litres for a bath or power shower.
- ▶ A dripping tap can waste up to 15 litres of water a day.
- ▶ Old single flush toilets can use up to 13 litres of water per flush whereas newer models can use 4 (for small flush) to 6 (for full flush) litres.
- ▶ An old dishwasher can use up to 55 litres of water per load, compared to around 21 litres for new, efficient models. Handwashing dishes uses around 63 litres for the same amount of washing.

STEP 3 – WHERE IS WATER WASTED AT HOME?

Now your student groups have their list of where and how they use water (and also how much if you completed step 2), ask them to look at the list and mark any instances where they might be wasting it. E.g.

- ▶ Are taps left running while washing dishes or cleaning teeth?
- ▶ Are more baths taken than showers?
- ▶ Are hose-pipes used to wash cars?
- ▶ Do you heat water more than you need to? (e.g. overfilled kettles and saucepans)
- ▶ Does water 'escape'? Are there any leaky taps that could have been fixed sooner?
- ▶ Are appliances and toilets new, efficient models?
- ▶ Can clothing be washed less frequently?

DESIGN A HOME WATER USAGE QUESTIONNAIRE

The next part of the activity is to get the students to design a Home Water Usage Questionnaire, based on the work they have already done.

Having done the theory, it's time for some practical work! Take the list of where water is used and ask the students to look at the list and write down which ones they can easily measure. For example, things you could include are:

- ▶ **Number of 'filled items' regularly used.** These are such items as bathtubs, kettles, anything that you fill with water. How much water fills a drinking glass? Or a saucepan used to boil potatoes? How much water does the cistern of a toilet hold? What about your kitchen sink or the one in the bathroom? They may be very different sizes! Some simple ways to estimate volumes of various filled items are by approximating these to basic geometric structures like spheres, cuboids cones – a guide to calculating volumes of such structures can be found by typing this short link into your web browser's address bar: goo.gl/lcFWSq
- ▶ **Some things may seem complicated or wasteful to measure but don't have to be.** For example, you can measure the amount of water used in a shower by timing the amount of time it takes to fill something small of a known volume. Then multiply that up to match the length of an average shower.
- ▶ **Household leaks** – if your house has a water meter then this is very easy to test. Check the reading on the meter and then make sure no water is used for a period of time, e.g. across a day when nobody is home. If the reading is different after the time allowed, there is a leak in either one or several places within the house. Divide this by the number of hours between checks and you know how much water you are losing per hour through leakage.
- ▶ **Appliances** – these will often have a stated volume either on them or on the supporting documents that come with them such as operating instructions. Depending on how often you use these you can calculate how much water each of these will use for each of these per week. Some interesting things to consider might be how much water a household uses to wash their clothes compared to themselves(!)

Use the finished list as the basis for designing a Home Water Usage Questionnaire that the students can take home to complete to measure their water use at home.

MY WATER USAGE QUESTIONNAIRE - PAGE --

QUESTION	RESULT

Photocopy this sheet as many times as you need

CARRY OUT THE QUESTIONNAIRE

The third part of the activity is to ask the students to fill in their Home Water Usage Questionnaire at home with the help of their parents/guardians.

Either print out copies of the questionnaire, or get the students to write out their own copy. Once printed out, ask the students to complete the questionnaire at home. How close do their measurements come to the estimates they made in step 2? How much do they differ from the Abu Dhabi average of 550 litres per person per day (it is likely to be lower, as that average includes water used in municipal parks and gardens, etc.)?

MAKE A 'SAVE WATER!' PLEDGE POSTER

The final part of the activity is to gather together the results of the questionnaire, get each student to make a water saving pledge, and record this on a poster on the classroom wall.

STEP 1 – (CHOOSE A PLEDGE)

Now the students have completed their questionnaires, ask each of them to have a look through their results and identify one thing they can do to improve the water efficiency of their house. This will be their water saving pledge.

Example pledges are:

- ▶ Don't leave the tap running when brushing teeth.
- ▶ Only run a washing machine or dishwasher when there's a full load to be done.
- ▶ Take quick showers instead of long baths.

STEP 2 – MAKE THE POSTER

To record their pledge, get the students to create a poster. You could either:

- ▶ Have the students to design a poster from scratch, and write/stick their pledges to it; or:
- ▶ Use the Roots & Shoots 'Mission Tracker' poster and activity cut-outs from the website (type in this link to go straight there: goo.gl/tAkHVS).

You may then want to revisit the poster later in the term and ask the students how well they are doing at upholding their pledge.

KEEP US UP TO DATE



If you do this activity we would love to know how it went. Just send us an email with details (and some pictures) to MrH@rootsnshoots.ae and let us know what you have been up to, and we'll feature it on the website!

WANT TO HELP IMPROVE THIS ACTIVITY?

This activity is a living document! Please help us by editing this activity to make it as good as possible. You can edit it by using this short link (just type it into your web browser's address bar): goo.gl/DHSOLX – full instructions are provided. Any edits that can make this resource easier to use in the classroom or more applicable to life in Abu Dhabi are very welcome, so please follow the link and make your contribution!

APPENDIX – LINKS TO OTHER PROGRAMMES

LINKS TO ABU DHABI EDUCATION (OUNCIL (ADEC) (CURRICULUM STRANDS:

Living World – this activity is about reducing water use in the home, meaning ground water is preserved and energy use and desalination minimised, with positive effects for the living world.

LINKS TO ENVIRONMENT AGENCY – ABU DHABI (EAD) PROGRAMMES:

KEY AREAS

- ▶ Direct link to **Water** – this activity is all about reducing water use in the home.
- ▶ Indirect link to **Air** – reducing water use means less energy used in water treatment and desalination, so less air pollution.
- ▶ Indirect link to **Climate Change** – reducing water use means less energy used in water treatment and desalination, so fewer emissions and less impact on the climate.

(CURRENT ENVIRONMENT (HABITATS):

- ▶ Direct link to **Ground Water** – this activity is all about reducing water use in the home.
- ▶ Indirect link to **Marine** – reducing water use in the home means less desalination and hence less discharge of high salt content brine into the marine environment.