ACTIVITY THREE: AUDITING OUR WATER CONSUMPTION

Auditing our individual family's water consumption is a good start to investigating how we can all reduce water waste and together, as a community, develop a water-wise management plan. This NATURAL SCIENCES activity allows learners to prepare for a water audit, collect data in and around their home, school and community and then develop a school water-wise management plan.

To prepare for an audit of the school, home or community water-supplies, current patterns of use must be calculated and averaged. This makes an audit a simple matter of recording the number of times each activity happens. Preparation activities also point to wasteful practises that can be changed.

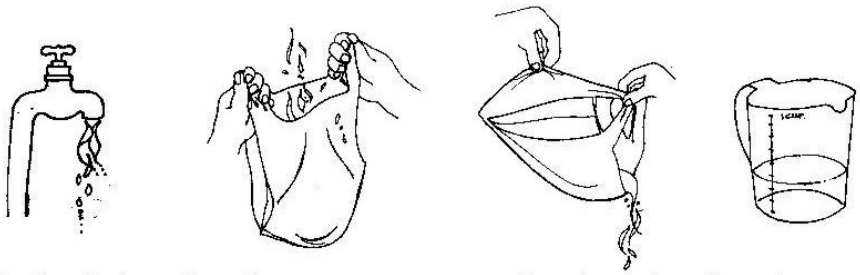
For example: People with piped water often clean their teeth or take a drink with the tap running. In this way, fresh water is wasted when it would have been more sensible to use a cup.

Let the learners try this activity:
Calculate the water used when brushing teeth or taking a drink from a running tap. Use a plastic bag to collect the wasted water and measure the amount wasted using the measuring equipment *(see box on the next page)*

Calculate the difference:

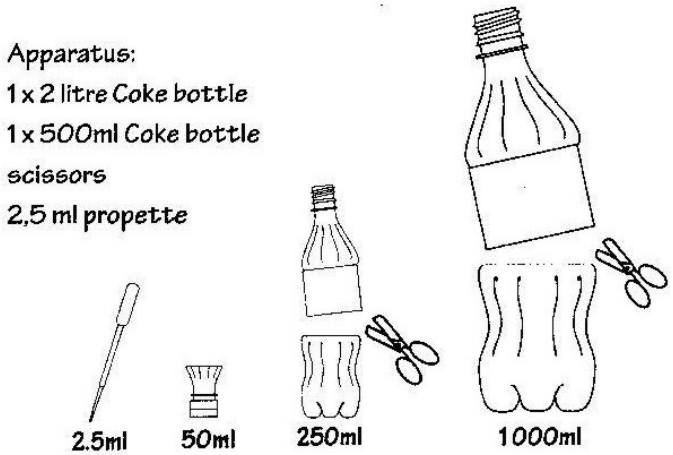
Water used with the tap left running	……*l*
Water used with a cup	……*l*
Difference (not wasted when cup used)	……*l*

BAG MEASURE



For fast leaks and running taps, use a supermarket plastic bag. Pour the water collected into a container and use a measuring jug to measure. A cheaper alternative is to make your own measuring equipment.

Making your own measures



- Cut the bottles as shown in the picture. This will give you 50ml; 200ml; 1 000ml; measuring apparatus.

- Accurate apparatus is important so check by filling the larger from the smaller:
  * The 2.5ml is pre-calibrated
  * 50ml is 20 x 2.5ml
  * 250ml is 5 x 50ml
  * 1 000ml is 4 x 250ml

Although not as accurate as a measuring jug, this equipment is more than adequate for auditing water use.

To measure a bag of water, simply fill the 1 000ml, counting each time until a part-filled container remains. Pour this into the 250ml until a part-filled container remains and do the same right down to a part-filled 50ml measure which is determined by the propette. Written like this, it seems a little complex but with practise a bailing and counting method is both quick and accurate.

Make a list of common water use activities in preparation for doing an audit of water use.

Flushing toilet

.....ℓ

Urinal

.....ℓ

Washing hands

.....ℓ

brushing teeth

.....ℓ

Drinking

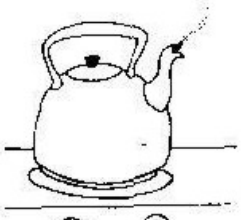
.....ℓ

Bathing

.....ℓ

Taking a shower

.....ℓ

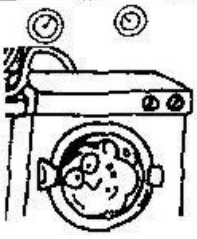


Kettle

.....ℓ

Hand washing clothes

.....ℓ

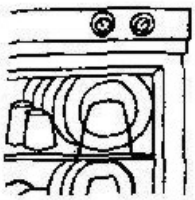


Washing machine

.....ℓ

Washing dishes

.....ℓ



Dishwasher

.....ℓ

Garden hose (litres per minute)

.....ℓ

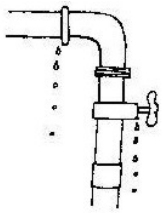
Cooking pots

.....ℓ

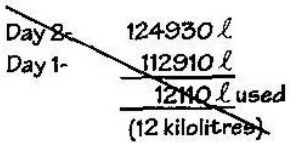
REMIND THE LEARNERS THAT …

Despite sound preparation and knowing how much water is used for each activity, a water audit is never an easy matter. You will only be successful if, from the beginning, you keep it simple and have ways of checking your work for accuracy.

For example:
If a check of results against the meter reading shows that more water is used that the audit records then:



1. There may be a leak in the pipes (check this by switching all the taps off and seeing if the meter keeps ticking)
2. You may have missed measuring an important water activity, or
3. Your calculations may be wrong!



In this way, an audit of water use will always present challenges and problems to be solved. Here are some ideas to help the learners plan an audit of the school, home and community water use.

SCHOOL: Start with each person in the class doing an audit of the water they use in a day. This can then be combined into an audit of the water used by the whole class. During National Water Week, try an audit of water use in the school and check the accuracy of your records using the water meter if there is one.

HOME: Get the learners to plan an audit with their family, using simple record sheets at each site of water use. Totals for the day should be matched with the meter reading or monthly water bill.

COMMUNITY: Patterns of use at home and at school can give the learners an idea of domestic water use in the community. Offices, industries and agriculture often use vast amounts of water when compared with domestic consumption. There are also many people in our communities who do not use piped water.

Remember that we need clean water for our health. Water conservation is not about people drinking or using less water but a challenge of working out ways to reduce unnecessary waste so there is more clean water to go around.

Let the learners adapt this table or develop their own to calculate school, home and community water use. Results should be compared with metered use. This is a good check of how accurate the audit has been:

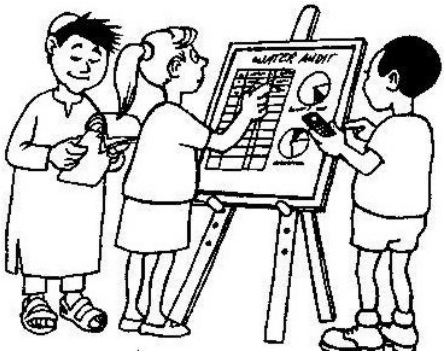
	Name of person	Washing hands	Drinking	Kitchen use	Washing machine	Toilet	Urinals	Hand basin	Shower	Garden hose	Washing carpets	Leaks detected	Other	Total Meter Reading *kl*		*l*
1																
2																
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
Total:																

Once the audits have been conducted – at school and home, discuss the results with the class.

Water audit actions can help us to reduce water wastage and thus save money. Many schools are now developing water wise management plans to make changes in their water consumption.

Has your school got a water wise management plan?

- If not, get the class to develop a plan for the entire school? Divide the class into small working groups and let them come up with five to ten ways of reducing water consumption in the school. As a class, go through the list and write down the most useful ones. Pass this plan to the head and management team of the school.



Criteria to assess learners during this natural sciences lesson

Criteria	Exceeded requirements of the Learning Outcome	Satisfied requirements of the Learning Outcome	Partially satisfied requirements of the Learning Outcome	Not satisfied requirements of the Learning Outcome
The learner adapted the water audit record sheet, where necessary, and added in more headings				
The learner was able to carry out a water audit around the school				
The learner contributed ideas in his/her group and during class to developing a school water wise management plan				