



## Precious Water - Teacher's Notes

### Essential Water - Discussion

*Some water uses are more important than others.*

In modern Australia:

- The average person requires 370L of water per day. In WA most of this goes on gardens.
- The average household requires 900L per day
- Industry and commerce uses a further 150L per day

Guess how much water:

1. Should a year 2 student drink? 1L. Add 1L more if you are exercising
2. Does it take to make a hamburger? 2,500L. Most of this is drunk by the cow as it grows
3. It takes to flush a modern toilet? 5L

### Method

- Read the data above and ask students what activities they use water for.
- Board student ideas.
- Ask students to classify their answers in their worksheet under the headings of:
  - I must have
  - I would prefer to have
  - I do not need
- Board student's answers
- Students break into groups which select two "must haves" from the board and each group discusses why having fresh water for their "must have" is absolutely necessary. Alternatively allocate "must haves" to each group.
- Students write their explanations into their worksheet and share them with the class.



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### Worth its Weight in Gold - Student Activity

We are used to always having water "on tap" nowadays.



During the 1900s Gold Rush out in the bush, fresh water was so difficult to get that weight for weight it was more expensive than gold!

Very expensive water was carried to the miners on the back of camels and bullocks. People's unwashed bodies stank from sweat and dirt. Disease was common. Many small children died from water borne diseases and were buried with their iron cots marking the edges of their graves. Life is hard without water.

#### Materials

For this activity it is a good idea to have a collection of water filled one and two litre containers. You will need enough to hold 20L of water or more. Screw top cool drink or milk containers are ideal because if students drop them there is less chance of mess. At the end of the activity students can feel the weight of water they should ideally need for 4 days.

It is 1900 and your students are newly arrived settlers in WA. They are poor and need money so they decide to travel inland to the Goldfields to make their fortune. There will be stages of their trip when they need to carry water with them as there is no water to be found. Since they are walking, ideally they will each need to carry at least five litres of water a day.

The next well is four days walking away. How many litres of water must you carry? Use the block below to estimate the amount of water needed. In



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year 2 students need to drink at least one litre of water a day. They need to add another litre if it is hot and yet another if they are exercising. Toss a coin to decide if each day will be hot or not. (Heads is hot)

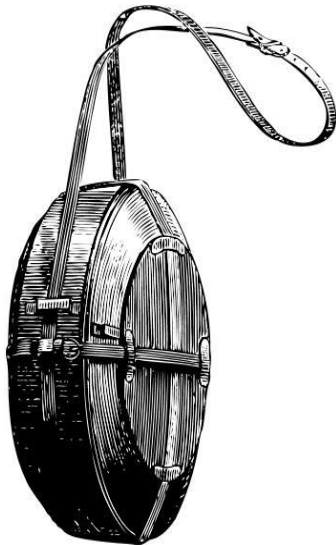
### Estimating drinking water

DAY	Drink	Exercise	Hot weather
1	X	X	?
2	X	X	?
3	X	X	?
4	X	X	?

How much water do you ideally need to carry? **Between 8 and 10L depending on the weather.**

1L of water weighs 1kg. What weight of water would you need to carry? **8-10kg.** The average year 2 student weighs about 20kg.

What fraction of your body weight would you be carrying on the first day? **They would need to carry almost half their own body weight!**



Of course the load would reduce each day. The average canteen (pictured) holds slightly less than 1L. How many canteens would you need to carry? **Between 8 and 11.**

In practice dehydration was not uncommon. Some students may have experienced dehydration headaches, dizziness and a general feeling of sickness after a day in the heat without rehydration.

**ASIDE:** Most Australians carried a waterbag not a canteen. It was made of hessian or sacking. Water seeping through its sides evaporated keeping the



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water relatively cool.

Until recently many Western Australian schools kept a waterbag hanging on the end of the veranda as a water cooler for students.

What could have been done to reduce water loss through sweating? People tried to reduce their water need by not travelling during the heat of the day. Rich people travelled by donkey, horse, camel and eventually by train.



Many hopeful miners could not carry their picks, shovels, camping gear and water as well. There are reports of tracks leading out of Perth and Northam with abandoned tent poles, tents and other gear along their sides. Travellers had to decide what was necessary and what was not.

How far do you think you could carry 10L of water? Any reasoned estimate.

You might like to help students by telling them 10kg is the weight of 5 large bags of sugar or 5 bags of potatoes. To more scientifically estimate, students can lift 10L of your prepared bottles of water to experience the weight. If they are a humorous class, congratulations!. Take them outside and see how hard it is for two students to carry them a third across the oval.

Although there are lakes on the route to Kalgoorlie, they are salt lakes and the water is not potable/drinkable. The water found underground in the mines is so saline that it is saltier than the sea and can contain arsenic which is often present with vein gold. Now the Goldfields area is supplied



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with freshwater from a pipeline running from Mundaring Dam near Perth 560 km to Kalgoorlie. It was designed by C Y O'Connor and finished in 1903.

### A Young Bush Hero - Story

You may wish to read this to your students. It tells of a very resourceful and brave young West Australian boy. His care for his brothers and sisters in desperate circumstances captured admiration across the British Empire and monies were raised to award him a medal for bravery. He lived near Lennonville in the Mt Magnet Goldfields.

More than a hundred years ago, ten-year-old Vincent Atkinson had to set off through bush tracks in blistering summer heat with his three younger brothers and a sister, the puppy and the baby sharing the go-cart with the waterbag. His father was away prospecting when his mother dropped dead while hanging up the washing. Vincent's first thought was to walk 12 miles (almost 18 km) to where his father was camped but he would have had to leave the little ones behind and he would not have reached his father by nightfall. He decided to walk to where he knew his uncle was working in a mine near Mt Magnet. There would be people there to help.

Before leaving their isolated camp he first fed and watered the hens and then switched off the windmill, so that precious water would not be wasted. He sat his brothers, Robert aged 8 and Arthur aged 3 and his sister Isabel aged 5 down to eat a meal of bread and butter before explaining what they had to do. He filled a waterbag for the children and took an enamel mug to feed water to the baby.

Walking barefoot in temperatures over 42°C was terrible. The baby needed water frequently and the exhausted puppy soon joined it in the go-cart.



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Then his three-year-old brother had to be carried because his feet were so badly blistered. Although suffering from heat and exhaustion himself, he successfully shepherded his family to the mine.

When his story was told in the newspapers in London people raised money to give him a medal for his foresight and bravery.

*I should like to thank Mary Callaghan and Geraldton Museum for their help in checking the facts of this event.*



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