

# liquid killer

**A numeracy activity addressing key elements of the National Numeracy Strategy (NNS) through comparing infant mortality rates for different countries and exploring the significance of water in these differences**

## Relevant elements of the Year 5 NNS Teaching Programme (p 22-23)

Suggested focus for this activity in italics:

### Number and number systems

- *Multiply and divide any positive integer up to 10,000 by 10 or 100 and understand the effect*
- *Solve simple problems using ideas of ratio and proportion ('one for every...' and 'one in every')*
- Use decimal notation for tenths
- Round a number with one or two decimal places to the nearest integer

### Calculations

- Begin to express a quotient as a decimal when dividing a whole number by 10
- Round up or down after division depending on the context

### Solving problems

- *Use all four operations to solve simple word problems involving numbers and quantities based on real life*

## Global Citizenship aims of the water activity

- ✓ To develop children's understanding of the causes and effects of inequality and social injustice
- ✓ To help children understand the relationship between people and the environment
- ✓ To encourage empathy towards others globally
- ✓ To encourage children to recognise and challenge injustice
- ✓ To equip children with the knowledge and understanding to empower them to take positive actions which ensure greater social justice.

*Many of these aims are based on the Oxfam Curriculum for Global Citizenship, available from Oxfam Education, 274 Banbury Road, Oxford, OX2 7DZ*

## Suggested lesson structure

### Mental or oral work

The lesson could begin with the rehearsal of mental strategies involving multiplying and dividing numbers by 10 and 100 to understand the effect of doing so. This could include a mixture of whole numbers and decimals.

### The main teaching activity

This activity involves the application of calculation strategies for multiplication and division by 10 and 100 to real world statistics on infant mortality. The activity alerts children to the scandal of infant mortality and reveals the huge differences in rates between different parts of the globe. This provides a good starting point to explore reasons for high infant mortality rates in certain countries, the major reason being illness and disease which result from the lack of access to clean water and sanitation.

The mental or oral work focusing on the effect of multiplying and dividing a number by 10 and 100 should be a sufficient introduction to the main activity, though this could be recapped at this stage. The main purposes of the teaching session should be to introduce the concept of infant mortality and explain rounding up, particularly with regards to decimal places. Data for one of the countries could be worked through as a whole group, though if an extra country is required for demonstration, Egypt has an infant mortality rate of 78 per 1000. This also provides an example of 'rounding up', e.g.  $78 \div 10 = 7.8$  (8 per 100)

Whilst the activity can be completed using only multiplication and division by 10, children should be made aware that to get to an 'out of 10 000' figure from an out of 100 figure involves multiplying by 100 and vice versa involves dividing by 100.

**Less able children** could be given the figures for infant mortality rates out of 10 for selected countries (rounded up to whole numbers for US, UK and France) and asked to find the rate per 1000. Alternatively they could carry out the same task as the other groups but be a focus group with teacher support.

### Plenary session

Selected children should share their figures and explain how they obtained them.

Children should also be encouraged to express feelings about the infant mortality rates and discuss why they think certain countries have high or low rates. Whilst the significance of access to clean and safe water should be highlighted, there are other significant reasons which determine infant mortality rates that children should be encouraged to think about. For example famine or poor diet, the level of medical facilities, access to immunisation against killer diseases, Aids, climate specific diseases such as malaria and war and conflict. Ultimately children should understand that it is poverty and global inequality that is the root cause of such differences in infant mortality rates around the world.



*Water Aid, the UK development charity working to help communities in Africa and Asia provide themselves with a safe water supply close to home, produce WaterLiterate and WaterNumerate, resources for the KS2 literacy and numeracy hour*

# Infant mortality rates for different countries

Infant mortality is a measure of the number of children who die before they reach the age of 5

Complete the table below showing infant mortality rates for different countries in the world. The figures given are the number of child deaths out of every 1000 children. Calculate each country's infant mortality figure out of every 100 children and every 10 000 children: **Some figures will need rounding up to the nearest whole number.**



Country	Infant mortality per 100 children	Infant mortality per 1000 children	Infant mortality per 10 000 children
Brazil		50	
Bangladesh		110	
United States		8	
Ethiopia		170	
Trinidad		20	
UK		7	
France		6	
Angola		290	

Using the information in the table consider the following questions:

Which country has the highest infant mortality rates?  
Which country has the lowest infant mortality rates?

Divide the countries into three groups: countries with **high infant mortality**, countries with **medium infant mortality** and countries with **low infant mortality**.

What factors do you think cause a country to have high or low infant mortality rates?

### Did you know?

◆ 80% (8 out of every 10) of all illnesses in poor countries are caused by lack of clean water and sanitation

◆ Diseases and illnesses caused by unsafe water kill 25 000 people every day

## Further resources

The following is a list of titles which will offer opportunities for further activities on issues of Water for KS2. They should be available through your local Development Education Centre (DEC).

**Clean Water: A right for all** (UNICEF) Activities on water, its supply, control and use, including pollution.

**Water: the Earth Strikes Back** (Belitha Press) A book exploring how water shapes the lives of people, plants and animals worldwide. Looks at global inequalities in water supply and how people can help guard this vital resource.

**Water Performance** (WaterAid) contains suggestions for using drama, dance, music, puppet and mask making to explore water problems and their solutions in developing countries.

**My world** (WWF-UK) A resource pack for primary teachers.

**Eco-Schools** (see back for details) Produce a Water booklet for teachers who wish to develop the topic as an element of the Eco-Schools scheme.

**The Green Umbrella** (Jill Brand - WWF) Stories, songs and poems which provide good starting points for classroom discussions and assemblies. The book contains seven sections including water.

**Primary Topic Poster Packs** (Oxfam) A range of colour poster sets focusing on key primary topics including water. Each topic set contains a variety of images and information as well as activity ideas.

**Fresh water** (UNESCO-UNEP) A series of posters, including water resources, supply and pollution.

**The water game** (Christian Aid) A game on water resources and supply in developing countries.

*Feedback on these activity ideas would be much appreciated. Comments can be sent to HEC or your local DEC or made via the Global Footprints website*

# Further ideas, contacts and information

## Of all the water in all the world

### Aim of the activity

This activity is designed to demonstrate the importance and worldwide scarcity of water as a resource. It can provide a good starting point for encouraging children to think of practical ways to take action at home or school to save water as well as providing application for numeracy knowledge and skills to a real life and global investigation. The activity could be used as a whole class demonstration/discussion lesson or delivered through the KS2 numeracy hour by a mixture of whole class teaching and group problem solving and investigation work.

### The activity

Using a large measuring container or bucket pour 10 litres of water into the container. Explain to children that this represents all the water in the world.

Brainstorm with the children all the places on earth where water is found or stored (e.g. oceans, lakes, rivers, aquifers, wells, reservoirs, water tanks, ice caps etc.). Discuss which of these sources are available for human use such as drinking, cooking, washing etc.

Through discussion reach the conclusion with children that much of the world's water is largely unusable salt/sea water.

Ask children to estimate how much of the total water in the world they think is available for use by humans, i.e. how much of it is fresh water. They could express this as a percentage or fraction of the total. Ask them to translate this to the proportion of the 10 litres in the container, e.g. half equals five litres, 25% equals 2.5 litres etc. Reveal the true figure (just 3% fresh water). Ask children how much of the 10 litre total this is (300ml). Remove this amount from the 10 litre total using a measuring jug. Explain that of this 3% fresh water, 2% is frozen in the ice caps leaving just 1% (100ml). Pour 200 ml back into the larger container, asking the children first to calculate how much should be poured back.

Ask children to calculate from the representative total the volume of water available/unavailable for human use (100ml/ 9900ml or 9.9L), and also as a fraction (1/100th/ 99/100ths) and a percentage (1%/ 99%).

The comparison of the amount of available water with the amount of unavailable water can provide a good starting point for discussion:

- Consider the importance of using water sensibly, conserving it wherever possible
- The injustice of the unequal distribution of such a valuable and vital commodity where some have private swimming pools while others have to live on as little as 10 litres of water a day

Try to make practical use of the water at the end of the activity, e.g. for washing up or for watering plants etc!

This activity is adapted from an idea supplied by the **Earth Centre**, the education centre aiming to encourage an alternative view of the earth and explore ways of creating a more sustainable future. Details of the centre and its educational programme from Earth Centre, Denaby Main, Doncaster DN12 4EA  
Tel: 01709 513 944 e-mail: [info@earthcentre.org.uk](mailto:info@earthcentre.org.uk) [www.earthcentre.org.uk](http://www.earthcentre.org.uk)

## Further information about water

The following organisations will be able to provide details of their work on water

**Oxfam** 274 Banbury Road, Oxford OX2 7DZ Tel: 01865 313600  
Produce a range of global citizenship education packs. Education catalogue contains extensive range of resources across the curriculum. To order phone 01202 712933. Also have a website dedicated to teachers and children which contains information and activities: [www.oxfam.org.uk/coolplanet](http://www.oxfam.org.uk/coolplanet)

**WaterAid** 27 - 29 Albert Embankment, London SE1 7UB Tel: 020 7793 4500 e-mail: [wateraid@wateraid.org.uk](mailto:wateraid@wateraid.org.uk). Website contains excellent interactive quiz for children: [www.wateraid.org.uk](http://www.wateraid.org.uk) Also produce *WaterLiterate* and *WaterNumerate*, resources for the KS2 literacy and numeracy hour.

**Friends of the Earth** 26-28 Underwood Street, London N1 7JQ  
Tel: 020 7490 1555 [www.foe.co.uk](http://www.foe.co.uk) Produce information sheets and other resources suitable for young people on all environmental issues including water supply and pollution.

**Eco-Schools** Elizabeth House, The Pier, Wigan WN3 4EX  
Tel: 01942 824620 [www.tidybritain.org.uk](http://www.tidybritain.org.uk) The European wide programme and award scheme aiming to increase environmental awareness and encourage pupil participation in managing their surroundings in schools.

### Development Education Centres (DECs)

This resource has been produced by the Humanities Education Centre, a DEC in Tower Hamlets, with contributions from other DECs. Your local DEC will be able to provide a range of exciting resource ideas for the teaching of Global Citizenship. To find your nearest DEC contact:

Development Education Association,  
29-31 Cowper Street, London, EC2A 4AP  
☎ 020 7490 8108 e-mail: [devedeassoc@gn.apc.org](mailto:devedeassoc@gn.apc.org)

### Your local DEC