Tapstar Waterwise Education Program

Teacher resource book

Years K to 6

Acknowledgements

Tapstar Waterwise Education Program, is funded by the Federal Government's Regional Partnerships. It aims to give students a sound understanding of water in our environment and the need to conserve this precious resource.

Shoalhaven Water has created this education program, with support from the Department of Transport and Regional Services (DOTARS). The teaching kit and performance was developed by Eaton Gorge Theatre Company (EGTC) and the design and layout was created by Miller Hare Graphic Design.

This resource has been developed to promote the conservation of water within NSW through educating students in stages 1 – 3 at Primary School.

The contribution of those listed below was highly valued and is gratefully acknowledged:

- John Gould, Shoalhaven Water, Director
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Special mention is given to the following local schools whose staff and students participated in workshops and in the scoping and/or review process. The comments provided were invaluable.

- Nowra High
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- St Johns the Evangelist
- St Michaels
- Huskisson Primary
- Nowra Primary

Shoalhaven Water
A Group Of Shoalhaven Council

Australian Government
Department of Transport and Regional Services

Contents

Introduction

For the past 8 years Shoalhaven Water has employed the well-known water conservation hero Tapstar to promote water conservation amongst the families of the Shoalhaven. As an initiative of our demand management program we have developed a new incarnation of Tapstar as a 'Super Hero' along with new support material to help Primary School teachers throughout the Shoalhaven and NSW teach important water conservation messages to their classes.

The new Tapstar Waterwise Education Program includes:

A live performance ('Tapstar Saves Water') including songs for kids to learn

A new website, which can be accessed via the education section of the Shoalhaven Water website (www.shoalwater.nsw.gov.au) examples of which are showcased at the back of this book

This teaching kit, which has a structured program of water related activities and lesson plans and also includes:

· Accompanying worksheets for each lesson

· A CD Rom (at the back of this workbook), which contains all the worksheets (ready to print), a digital version of this Workbook (ready to print) and the music for the songs.

The Program has been written to enable teachers and educators to achieve outcomes from the NSW Syllabus, and these outcomes have been highlighted on each of the lesson plans to allow for easy assimilation into the classroom.

Tracking performance

It is important to be able to track students' progress and reward them for completing the activities, so we have included a number of resources to help in the form of quizzes for students, surveys for teachers and the Waterwise Elementary Training (WET) Certificate.

Students work towards becoming a 'Five Drop' Junior Water Inspector. Each lesson they complete earns them a water drop sticker, which they add to their certificate. Once they have collected all five stickers they become a fully-fledged Junior Water Inspector.

In developing this Education Program Shoalhaven Water hopes to not only promote the conservation of one of our most precious resources, but also to provide the opportunity for schools to become more actively involved in water conservation and engage with children and the community to help create a sustainable future.

Feedback

As part of our on-going commitment to providing new and innovative ways to get water conservation messages into the community, we value your feedback and encourage you to take a few minutes to complete the survey form contained on the CD at the back of this book. With your help we can continue to improve and expand our education programs.

Program overview

Stage One Outcomes

DRAS1.1	takes on roles in drama to explore familiar and imagined situations.
DRAS1.3	interacts collaboratively to communicate the action of drama with others.
DM ESI.8	generates own ideas and designs through trial and error,play, modelling and making.
DM SI.8	develops and implements own ideas in response to an investigation of an environmental resource.
DES1.1	represents and interprets data displays made from objects and pictures.
DS1.1	gathers and organises data, displays data using column and picture graphs and interprets information
INV ESI.7	investigates their surroundings by observing, questioning, exploring and reporting.
INV SI.7	conducts guided investigations by observing, questioning, predicting, collecting and recording data, and suggesting possible solutions.
ES ESI.6	explores and identifies ways the environment influences their daily lives.
ES SI.6	identifies and describes ways in which people and other living things depend upon the Earth and its environment.
ENSI.6	demonstrates an understanding of the relationship between environments and people.
VAES1.1	makes simple pictures and other kinds of artworks about things and experiences.
VAS1.1 -	makes artworks in a particular way about experiences of real and imagined things.
VA5	works co-operatively with others in groups on scientific and technological understanding.

Stage Two Outcomes

DS2.1	gathers and organises data, displays data using tables and graphs and interprets the results.
ENS2.6	describes people`s interactions with environments and identifies responsible ways of interacting with environments.
INV S2.7	conducts investigations by observing, questioning, predicting, testing, collecting, recording and analysing data and drawing conclusions.
LTS2.3	identifies and describes the structure of living things and ways in which living things interact with their environment.
RS2.9	with teacher guidance, gathers and sorts information on a topic from a variety of sources.
UTS2.9	selects and uses a variety of equipment, computer based technology, materials and other resources to enhance investigation tasks.
VAS2.5	works co-operatively in groups on scientific tasks and challenges.

Program overview

Stage Three Outcomes

DES3.1	displays and interprets data in graphs with scales of many one to one correspondence.
ENS3.5	demonstrates an understanding of the interconnectedness between Australia and global environments and how individuals and groups can act in an ecologically responsible way.
ENS3.6	explains how beliefs and practices influence the ways in which people interact with change and value their environment.
ENS3.7	describes how Australian people, systema and communities are globally interconnected and recognise global responsibilities.
INVS3.7	conducts investigations and makes judgements based on observing, questioning, planning, predicting, testing, collecting and analysing data, and drawing conclusions.
LTS3.3	Identifies, describes and evaluates the interactions between living things and the effects on the environment
MS3.3	recognises and identifies the concepts of displacement and overflow
VAS3.5	works co-operatively with others in groups on scientific tasks and challenges.
UTS3.9	evaluates, selects and uses a range of equipment, computer based technology, materials and other resources to meet the requirements and constraints of investigation tasks.

Stage 1

Lesson 1

Help Tapstar explore the properties of water.

Outcomes:

DM ESI.8
generates own ideas and designs through trial and error, play, modelling and making.

INV ESI.7
investigates their surroundings by observing, questioning, exploring and reporting.

DM SI.8
develops and implements own ideas in response to an investigation of an environmental resource.

INV SI.7
conducts guided investigations by observing, questioning, predicting, collecting and recording data, and suggesting possible solutions.

VA5
works co-operatively with others in groups on scientific and technological understanding.

Resources:

- water trays / tote trays filled with water
- water play equipment eg. water wheels
- colanders, strainers (large / small), funnels etc
- various containers
- art paper / media for illustrating eg. pencils, crayons etc

Teaching Strategies:

Task: Explore the properties of water.

- activity: students explore the properties of water using a water tray and various water play toys eg. bottles, colanders, strainers, funnels, water wheels and containers.
- as a class group discuss the students' observations.
- the teacher then reinforces the above concepts through a class group demonstration.
- the questions: does water have colour? does water smell? does water always run down hill? does water move things?
- explanation: water flows, water fills up spaces, water can push, pull or turn objects. Water is a liquid, water makes the same shape as its container, water has no taste or smell, it has no colour and does not block the light.
- action: students record results using illustrations eg. water flows – students draw a river.

Stage 1

Lesson 2

Tapstar and friends investigate the states of water

Outcomes:

DM ESI.8
generates own ideas and designs through trial and error, play, modelling and making.

INV ESI.7
investigates their surroundings by observing, questioning, exploring and reporting.

DM SI.8
develops and implements own ideas in response to an investigation of an environmental resource.

INV SI.7
conducts guided investigations by observing, questioning, predicting, collecting and recording data, and suggesting possible solutions.

VA5
works co-operatively with others in groups on scientific and technological understanding.

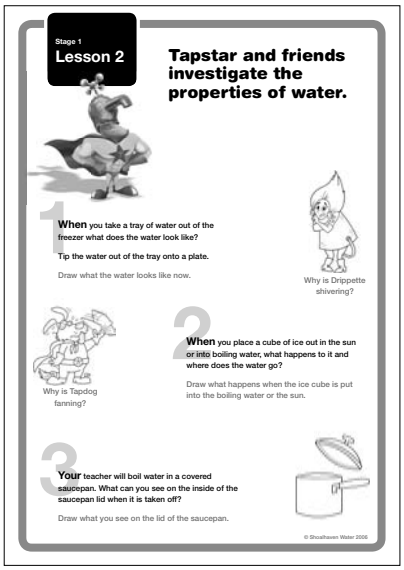
Resources:

- ice cube tray filled with ice
- jug partially filled with water or other equipment to boil water and cause steam (water vapour)
- saucepan lid
- worksheet

Teaching Strategies:

Task: Investigate the states of water - solid, liquid and gas

- activity: teacher demonstration / class group to explore the properties of water.
- fill an ice cube tray with water and place in the freezer and discuss results. Discuss how the water becomes frozen and solid as it cools.
- then place an ice cube in a container of warm water or in the sun and observe what happens. Discuss how the water melts and becomes a liquid again.
- fill a jug with water and boil the jug. Children observe what happens when the water in the jug boils. Discuss that heat is causing the water to turn to steam. It becomes a gas.
- the teacher places a saucepan lid over the top of the spout of the boiling jug for a few minutes and remove the saucepan lid. Discuss how the water droplets have formed because the lid is cool and how the water changes back to a liquid.
- the questions: have they ever seen the snow? or steam on a road on a hot day after it rains?
- explain that, like the water in the jug that became steam when heated, up the oceans, rivers and puddles also heat up with the suns rays and steam rises up into the air. The water has evaporated. When the water vapour cools it rains.
- action: students complete worksheet to reinforce concepts / vocabulary: liquid, frozen, solid, droplets, gas.


Stage 1
Lesson 2

Tapstar and friends investigate the properties of water.

1 **When** you take a tray of water out of the freezer what does the water look like?

Tip the water out of the tray onto a plate.

Draw what the water looks like now.

Why is Drippette shivering?

Why is Tapdog fanning?

2 **When** you place a cube of ice out in the sun or into boiling water, what happens to it and where does the water go?

Draw what happens when the ice cube is put into the boiling water or the sun.

3 **Your** teacher will boil water in a covered saucepan. What can you see on the inside of the saucepan lid when it is taken off?

Draw what you see on the lid of the saucepan.

Stage 1

Lesson 3

Tapstar and the Dripettes follow the Water Cycle

Outcomes:

ES ESI.6
explores and identifies ways the environment influences their daily lives.

ES SI.6
identifies and describes ways in which people and other living things depend upon the Earth and its environment.

ENSI.6
demonstrates an understanding of the relationship between environments and people.

Resources:

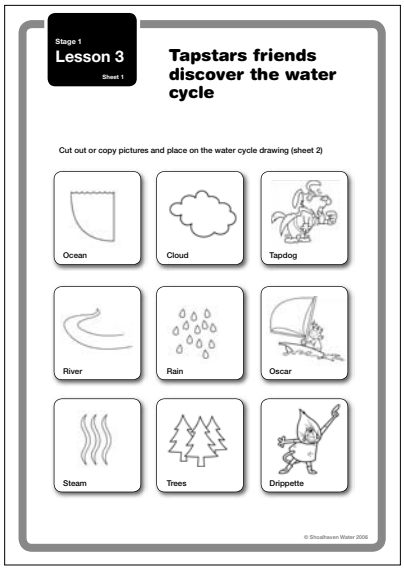
- photocopy or create demonstration model using worksheet as template (poster / felt / magnetic)
- worksheet

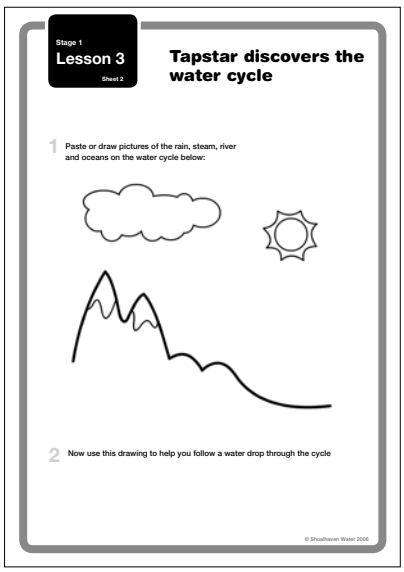
In the library
Carle, E. 1970, The Very Hungry Caterpillar, Puffin, London

Teaching Strategies:

Task: To introduce the concept of the Water Cycle.

- activity: using a demonstration model explain in simple terms the " Water Cycle". Discuss water turning to steam caused by heat from the sun as the water vapour rises it forms clouds and when these clouds move into cold air it rains.
- read "*The Very Hungry Caterpillar*" to assist in understanding the process of a cycle
- explain that water is used over and over again over millions of years through the water cycle. This means the water we are drinking is the same water that the dinosaurs drank. The sun and the water in the river and oceans all work together to recycle water, making it clean and fresh in the process. Protecting water from pollution will help the water cycle.
- the questions: Ask students to label the elements of the water cycle. Show evaporation (steam), the sea and ocean and also rain from the clouds. Draw the water returning to the sea from the rivers.
- action: students complete worksheet or could draw their own water cycle.





Stage 1

Lesson 4

Help Tapstar find out where in the world water is found

Outcomes:

ES ESI.6
explores and identifies ways the environment influences their daily lives.

ES SI.6
identifies and describes ways in which people and other living things depend upon the Earth and its environment.

ENSI.6
demonstrates an understanding of the relationship between environments and people.

Resources:

- clear plastic cup
- water
- salt
- bucket filled with water
- tea cup
- teaspoon
- eyedropper

Teaching strategies:

Task: To discover where in the world we find the water on which we depend

- activity: as a class group brainstorm the various places where water is found i.e. oceans, seas, rivers, lakes, ponds, dams, clouds, etc. Discuss how all water is not the same.
- introduce the concept that there are two types of water on Earth: fresh water and salt water.

Experiment 1: - pour fresh water from a tap into a glass.
- ask a student to hold the glass of fresh water
- ask the student to taste the water in the glass and comment on its taste.
- add a teaspoon of salt to the glass of water.
- ask a student to taste the water and comment on its taste.

Experiment 2: (as demonstrated in play).
- fill a bucket with water. Discuss with students that this represents all the water on Earth of which nearly all is ocean (98%). Ask them to use their imagination.
- fill a cup with water. Discuss with students that this is all the fresh water in the world, including the frozen icecaps.
- take a teaspoon of water from the cup, choose a student to take the teaspoon. Discuss with the students that this represents all the water found underground.
- using an eyedropper, suck up some water from the teaspoon and drop one drop into a clear glass. Discuss that this represents all the water that is left for everyone on Earth to use.

- the questions: Ask what the students think this means and did the students realise that such a small part of the water in the world is fresh? Do any animals and plants not need water? What animals need water and what would happen to them if there was no water?
- explain that we need to look after our water resource and that it is not only humans who need water.

Stage 1

Lesson 5

Water is important to us and Tapstar

Outcomes:

ES ESI.6
explores and identifies ways the environment influences their daily lives

ES SI.6
identifies and describes ways in which people and other living things depend upon the earth and its environments.

ENSI.6
demonstrates an understanding of the relationship between Earth and its environments.

INV SI.7
conducts guided investigations by observing, questioning, predicting, collecting and recording data and suggesting possible explanations.

DES1.1
represents and interprets data displays made from objects and pictures.

DS1.1
gathers and organizes data, displays data using column and picture graphs and interprets information.

Resources:

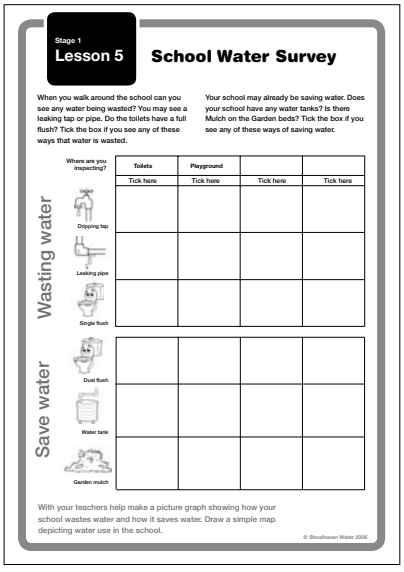
- school survey form (worksheet)
- clipboards
- pen / pencil

In the library
Zion, G 1992, Harry the dirty Dog, Random House Children's Books, London

Teaching strategies:

Task: To investigate how humans depend on water

- activity: as a class group list and also discuss the various ways we use water eg. to drink, wash, grow food etc.
  - as a class group / small groups:
  - students walk around the school and list any problem areas regarding water use and wastage on a worksheet. Note the drinking fountains, garden taps, sink trough, dual flush toilet, single flush toilet, water meter.
  - Read *Harry the Dirty Dog* by Gene Zion.
- the questions: Discuss the list prepared by students. Ask which water uses do they need and why.
- explain some common ways that we waste water eg. leaving the tap running, dripping taps, leaking pipes. Revise and reinforce the concept that we must not waste water. Discuss how some water use is essential and how there is more life where there is more water (rainforest). Discuss how each water use rated and what was not important to students. If we waste water we may run out and if we didn't have water we wouldn't be able to put out fires etc.
- action: students complete the worksheet and record this information as a picture graph, using picture symbols from the worksheet.



Stage 1
Lesson 5

School Water Survey

When you walk around the school can you see any water being wasted? You may see a leaking tap or pipe. Do the toilets have a full flush? Tick the box if you see any of these ways that water is wasted.

Your school may already be saving water. Does your school have any water tanks? Is there Mulch on the Garden beds? Tick the box if you see any of these ways of saving water.

Where are you inspecting?	Toilets	Playground		
	Tick here	Tick here	Tick here	Tick here
Wasting water: Dripping tap				
Wasting water: Leaking pipe				
Wasting water: Single flush				
Save water: Dual flush				
Save water: Water tank				
Save water: Garden mulch				

With your teachers help make a picture graph showing how your school wastes water and how it saves water. Draw a simple map depicting water use in the school.

Stage 1

Lesson 6

Final step to becoming a Junior Water Inspector

Outcomes:

ENS1.6
demonstrates an understanding of the relationship between environments and people.

VAES1.1
makes simple pictures and other kinds of artworks about things and experiences.

VAS1.1
makes artworks in a particular way about experiences of real and imagined things.

DRAS1.1
takes on roles in drama to explore familiar and imagined situations.

DRAS1.3
interacts collaboratively to communicate the action of drama with others.

Resources:

- role play activity cards – worksheet
- art paper
- various art media eg. pencils, oil pastels crayons, ink washes, paints

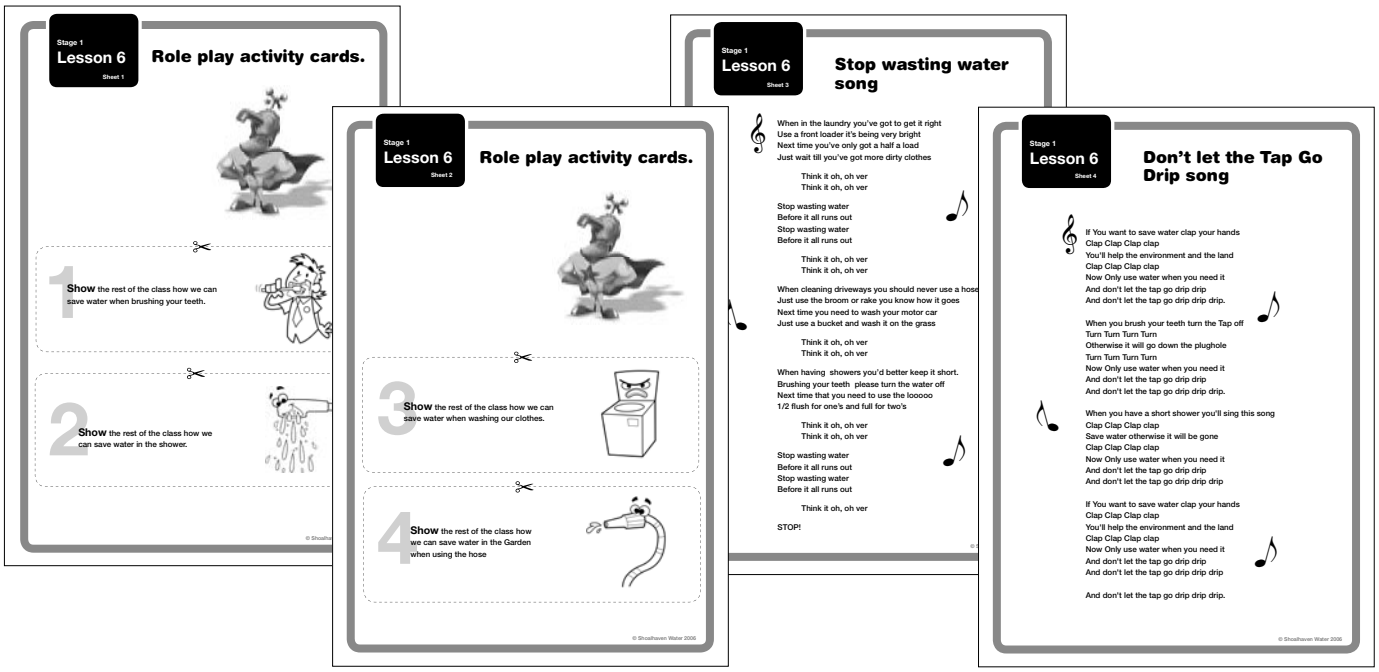
In the library
Rosenfeldt, R. 1980 Tiddalick: The frog who caused a flood, Puffin Books

Teaching strategies:

Task: To reinforce the concept: stop wasting water.

- activity: students role play various ways they can save water, they must imagine what life would be like without water.
  - turning off the water while they clean their teeth
  - taking a short shower
  - not washing only one shirt
  - making sure there is a full load in the dishwasher
  - in the garden brooming the path instead of hosing

  (refer to role play activity cards – worksheet).
- sing the *"Stop Wasting Water"* song from the play "Tapstar Saves Water".
- sing and perform "Don't Let the Tap Go Drip" song from the play "Tapstar Saves Water".
- read *"Tiddalink: The frog who caused a flood"*
- the questions: You see someone brushing their teeth while the tap is running - what do you do? Students at school are playing with the taps in the toilet - what do you do? Ask students to role play.
- action: students use role play activity cards and sing songs. They then create their own posters based around the theme.
- Students take the *Tapstar Quiz - Stage 1*



Stage 2

Lesson 1

Help Tapstar explore the properties of water

Outcomes:

NV S2.7
conducts investigations by observing, questioning, predicting, testing, collecting, recording and analysing data and drawing conclusions.

VAS2.5
works cooperatively in groups on scientific tasks and challenges.

Resources:

- activity instruction cards – worksheet
- tote tray filled with water – one per group
- a set of: bottles, colander, strainers (large / small), funnels, containers, a water wheel – one set per group if possible

Note: use a water wheel from Kindergarten water play equipment or alternatively a small mouse wheel (from a pet shop.)

- ice cube tray with ice
- a clear plastic cup
- a jug partially filled with water
- a saucepan lid

Teaching strategies:

Task: Explore the properties of water as it can change its state, shape and form.

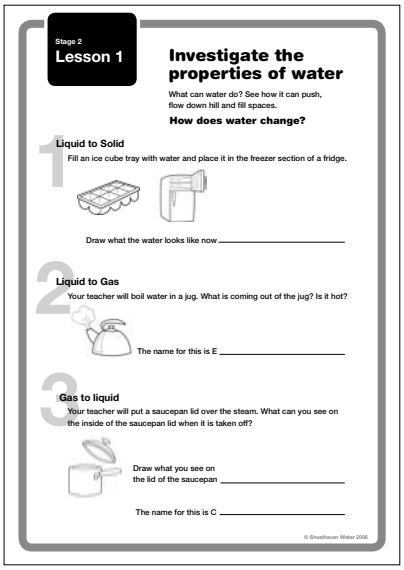
- activity: small groups and the class explore the properties of water.

  Experiment 1: each group is asked the question: what can water do?

  - water flows, water can fill spaces, water can push, pull or turn objects, water runs down hill.
  - each group reports back to the class group their findings.

  Experiment 2: as a class investigate: can water change its form?

  - fill an ice cube tray with water and place in the freezer and observe what happens. Discuss the fact that water becomes frozen and solid as it cools.
  - then place an ice cube in a container of warm water or in the sun and observe what happens. Discuss the fact that the water melts and becomes a liquid again
  - fill a jug with water, then boil the jug. Children observe what happens when the water in the jug boils. Discuss that heat is causing the water to turn to steam. The water becomes steam and escapes into the air. It becomes a gas.
  - the teacher places a saucepan lid over the top of the spout of the boiling jug for a few minutes then removes the saucepan lid. Discuss the water condensation or droplets. Discuss how it is the lid being cooler than the steam that makes the water change back to a liquid.
  - discuss findings from all the experiments / list findings.
- the questions: Ask students to provide words that we use to describe the three states of water. These words will include water, cloud, rain, hail, ice, snow, steam, vapour. Have students ever seen the steam rising off the road after rain on a hot day? What is causing the water to turn to steam?
- explain that water is a liquid; water makes the same shape as its container; water has no taste or smell; it has no colour and does not block the light. Also discuss that water can change its state - it can be a liquid, solid or a gas. Explain this experiment in relation to the water cycle - the evaporation of water is caused by the sun forming clouds and the resulting rain (precipitation) is caused when these clouds move into cold air.
- action: students use worksheet to reinforce the above concepts.


Stage 2
Lesson 1

Investigate the properties of water

What can water do? See how it can push, flow down hill and fill spaces.

How does water change?

1 **Liquid to Solid**
Fill an ice cube tray with water and place it in the freezer section of a fridge.

Draw what the water looks like now _____

2 **Liquid to Gas**
Your teacher will boil water in a jug. What is coming out of the jug? Is it hot?

The name for this is E _____

3 **Gas to liquid**
Your teacher will put a saucepan lid over the steam. What can you see on the inside of the saucepan lid when it is taken off?

Draw what you see on the lid of the saucepan _____

The name for this is C _____

Stage 2

Lesson 2

Learn the Water Cycle with Tapstar

Outcomes:

ENS2.6
describes people`s interactions with environments and identifies responsible ways of interacting with environments.

LTS2.3
identifies and describes the structure of living things and ways in which living things interact with their environment.

Resources:

- bowl
- lunch wrap
- cup
- food colour
- demonstration model (felt / magnetic / poster)
- worksheet

In the library
Carle, E. 1970, The Very Hungry Caterpillar, Puffin, London

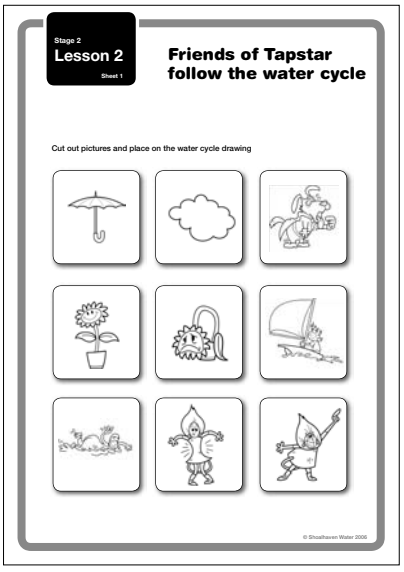
Teaching Strategies:

Task: To introduce the concept of the Water Cycle.

- activity: revise previous concepts; that is water can exist in different forms - as a liquid, as a gas or as a solid. Explain that, like the water in the jug that became steam when heated, so do the oceans, rivers and puddles become steam when heated by the sun on their surface. This steam then rises up into the air. The water has evaporated and when the water vapour cools it rains.
- introduce the Water Cycle using demonstration model or

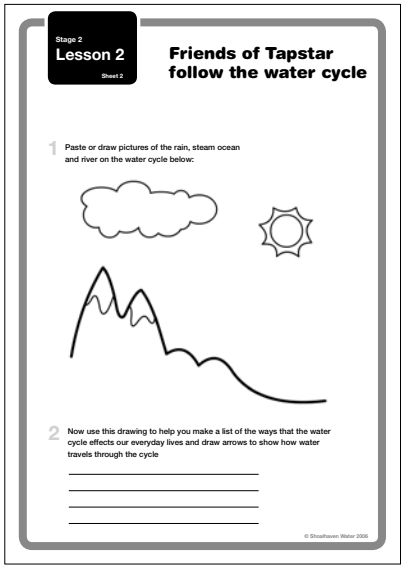
  Experiment: introduce the Water cycle in a bowl;

  - fill a deep glass bowl with about 2cm of warm water
  - add food colour
  - place a dry cup in the middle of the bowl
  - stretch plastic food wrap over the bowl
  - put a small weight on the wrap in the middle above the cup
  - place the experiment in direct sunlight
  - keep checking for water droplets condensing on the plastic
  - after a few days see if any water has dropped into the cup
  - ask students where the droplets come from
  - observe what colour is in the cup
  - Read "*The Very Hungry Caterpillar*" to reinforce the concept of a cycle.
- the question: How does the Water Cycle affect us? List ways that the water cycle affects our lives now and in the future.
- explain that water is used over and over again over millions of years. The water cycle is endless and water is constantly evaporating and forming clouds. The water in clouds precipitates mostly as rain, but can reach the ground as snow or hail. The sun and water work together to recycle water, making it clean and fresh in the process. To ensure it continues unhindered we need to keep the water unpolluted.
- action: students complete worksheet or draw their own water cycle to be displayed around the room


Stage 2
Lesson 2
Sheet 1

Friends of Tapstar follow the water cycle

Cut out pictures and place on the water cycle drawing


Stage 2
Lesson 2
Sheet 2

Friends of Tapstar follow the water cycle

1 Paste or draw pictures of the rain, steam ocean and river on the water cycle below:

2 Now use this drawing to help you make a list of the ways that the water cycle effects our everyday lives and draw arrows to show how water travels through the cycle

Stage 2

Lesson 3

Help Tapstar find the Earth's water

Outcomes:

INVS2.7
conducts investigations by observing, questioning, predicting, testing, collecting, recording and analysing data and drawing conclusions.

ENS2.6
describes people`s interactions with environments and identifies responsible ways of interacting with environments.

Resources:

- a clear plastic cup
- salt
- a bucket filled with water
- a tea cup
- a teaspoon
- an eyedropper

Teaching strategies:

Task: To investigate where the Earth's water is found and that only a small part is available as freshwater for our use.

- activity: students investigate: Where do we find water on Earth? The teacher may need to discuss that water can also be found underground in aquifers and wells etc.
  - in groups, students brainstorm / list the various places that water is found on Earth.
  - groups then report back to class group / list findings.
  - As a class group investigate: Is all water on earth the same?

  Experiment 1: pour a glass of fresh water from the tap. Choose a student to taste test the water in the glass and comment on the taste.
  - add a teaspoon of salt to the glass of water and ask the student to re-taste the water and comment on the taste.
  - discuss conclusions i.e. there are two types of water found on Earth - salt water and fresh water.
  - as a class group investigate: How much water is available for us to use?

  Experiment 2: Students stand in a circle and take turns to add cups of water to a tank (or fill 1 bucket). Tell them that this represents the world's entire water resource [1,260,000,000,000,000,000,000 litres]
  - take out 2 cups. What is left in the bucket represent the oceans - 98% of the world's water is no good to people, animals and plants.
  - 2 cups represents the freshwater on earth - 2% of world supply.
  - of this freshwater 1.6 cups represents water locked up in the polar ice caps - 1.6% of world supply
  - take out 0.4 cups (or a teaspoon). All but a drop is in underground aquifers and wells - 0.36%
  - one drop is all the water we have left for us and the plants and animals, in lakes rivers etc. - 0.04%
- the questions: What does this tell us about our water? Did you realise that such a small part of the water in the world is fresh? What else needs water? Ask: do any animals not need water? Is all freshwater usable? What would happen if we don't look after water?
- explain that we need to look after our water resource and that it is not only humans who need water. Some water is trapped underground or flows quickly down rivers and into the sea so it can not be collected. What is worse is that some water in the world is now too polluted for us to use.
- action: design and put up a display of changes that need to occur at the school to conserve water

Stage 2

Lesson 4

How humans use water and the impact this has on our environment

Outcomes:

ENS2.6
describes people`s interactions with environments and identifies responsible ways of interacting with environments.

RS2.9
with teacher guidance, gathers and sorts information on a topic from a variety of sources.

UTS2.9
selects and uses a variety of equipment, computer based technology, materials and other resources to enhance investigation tasks.

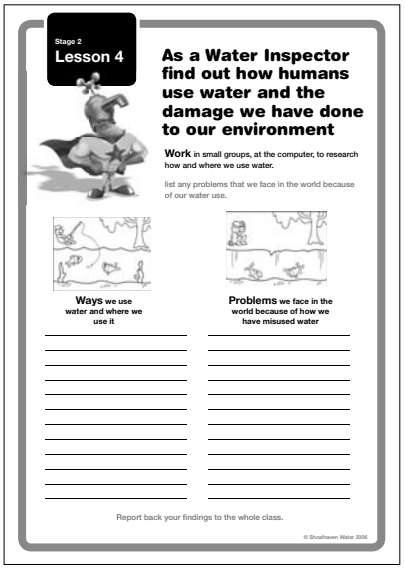
Resources:

- computers
- worksheet

Teaching strategies:

Task: To investigate human use of water as a resource and the problems that have arisen as a result of human usage.

- activity: Introduce the term “resource”. In groups, students brainstorm how humans use water / record their results.
  - as a class group, discuss findings.
  - in small groups then research (using computers) any problems that may be facing us in regards to our use of water / report back findings to class group. Discuss students findings / draw conclusions.
- explain why we need to use our water wisely and protect this resource. To obtain drinking water, rainwater is collected in catchments. A catchment is an area of land that drains and concentrates runoff that is often collected in a river, lake or dam. The area where the rain falls needs to be protected so we need to stop people from polluting. There will be times when water is in short supply and rivers may run dry, we call this a drought.
- action: students use worksheet as a research guide.


Stage 2
Lesson 4

As a Water Inspector find out how humans use water and the damage we have done to our environment

Work in small groups, at the computer, to research how and where we use water.

list any problems that we face in the world because of our water use.

Ways we use water and where we use it

Problems we face in the world because of how we have misused water

Report back your findings to the whole class.

Stage 2

Lesson 5

Prevent wastage of water in the school environment with Tapstar

Outcomes:

INVS2.7
conducts investigations by observing, questioning, predicting, testing, collecting, recording and analysing data and drawing conclusions.

ENS2.6
describes people`s interactions with environments and identifies responsible ways of interacting with environments.

DS2.1
gathers and organises data, displays data using tables and graphs and interprets the results.

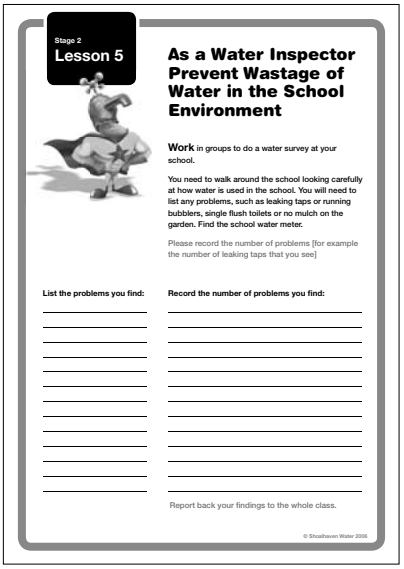
Resources:

- school survey form – worksheet
- clipboards
- pen / pencil

Teaching strategies:

Task: To find practical solutions to prevent the wastage of water in students' school environment.

- activity: Firstly, revise concepts formed in Lesson 4, that we need to use our water wisely and stop wasting water.
  - revise some common ways that we waste water eg. dripping or running taps, leaking pipes, no mulch on gardens, single flush toilets.
  - in groups, students survey the school and list any problem areas regarding water wastage.
  - record this information as a column graph for future reference.
  - students discuss possible solutions to prevent water wastage at school and ways to save water.
  - discuss how to help the school focus on water use:
    - signs reminding students to turn off the taps.
    - installation of a water tank at the school for saving rainwater and for use watering school gardens.
    - the use of mulch or leaf litter to stop evaporation of water so that the ground stays moist for longer periods of time
- explain that conserving water is good for the environment and that the school pays for water used. Running taps are often the result of careless use. If you see a drop make it stop!
- actions: students use worksheet to survey the school and list any problem areas regarding water wastage


Stage 2
Lesson 5

As a Water Inspector Prevent Wastage of Water in the School Environment

Work in groups to do a water survey at your school.

You need to walk around the school looking carefully at how water is used in the school. You will need to list any problems, such as leaking taps or running bubblers, single flush toilets or no mulch on the garden. Find the school water meter.

Please record the number of problems [for example the number of leaking taps that you see]

List the problems you find:

Record the number of problems you find:

Report back your findings to the whole class.

Stage 2

Lesson 6

Junior Water Inspectors "Stop Wasting Water"

Outcomes:

ENS2.6
demonstrates an understanding of the relationship between environments and people.

DRAS2.1
takes on and sustains roles in a variety of drama forms to express meaning in a wide range of imagined situations.

DRAS2.3
sequences the action of the drama to create meaning for an audience.

VAS2.2
uses the forms to suggest the qualities of subject matter.

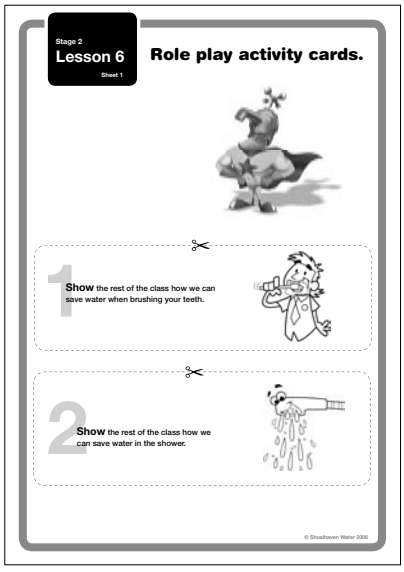
Resources:

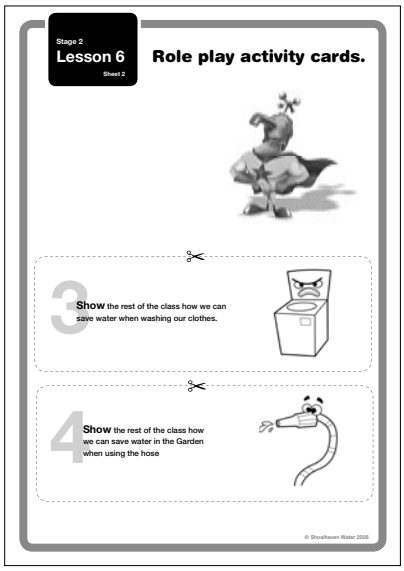
- role play activity cards (Stage 2 Lesson 6)
- art paper
- various art media – pencils, oil pastel crayons, ink washes, paints
- various materials for collage eg. aluminium foil for taps etc

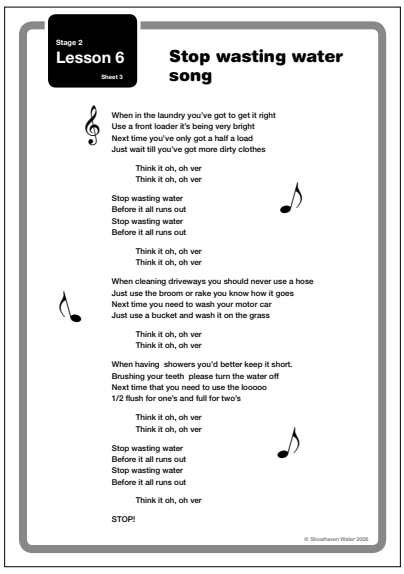
Teaching strategies:

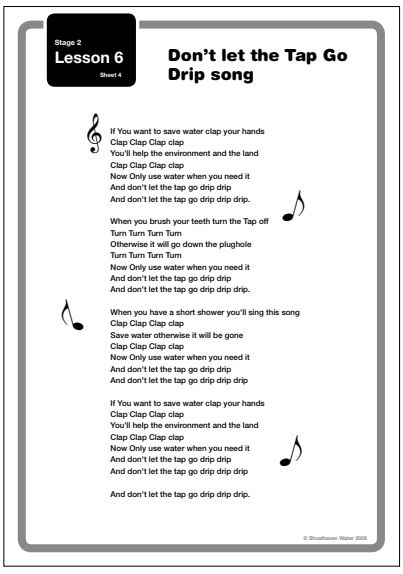
Task: To reinforce the concept: *"stop wasting water"* allowing students to appreciate the relationship with their environment.

- activity: role play / dramatise various scenarios for saving water.
  - divide students into small groups, give each group an activity card outlining a particular scenario
  - turn off the tap when cleaning teeth
  - fix a dripping tap
  - taking a short shower
  - not washing only one shirt, wait for a full load
  - making sure there is a full load in the dishwasher
  - in the garden brooming the path instead of hosing
  - each group improvises a short skit based on their scenario and performs for the class
  - learn the *"Stop Wasting Water"* and *"Don't let the tap go drip"* songs and choreograph a routine to go with the music using the worksheet.
- the questions: What will you do if you see a leaking tap?
- Explain that toilets consume the largest amount of water in the school, and they can use a half flush if available. A lot of water can be saved if toilets or taps that are leaking can be quickly repaired. Let a teacher know if you see any problems. Remember you are a Junior Water Inspector.
- Action: students use role play activity cards and sing songs. They then create their own poster based around the theme:*"Stop Wasting Water"*
- students take the *Tapstar Quiz* - Stage 2









Stage 3

Lesson 1

Tapstar investigates the properties of water

Outcomes:

INVS3.7
conducts their own investigations and makes judgments based on the results of observing, questioning, planning, predicting, testing, collecting, recording and analysing of data, and drawing conclusions

VAS3.5
works co-operatively with others in groups on scientific tasks and challenges.

MS3.3
recognises and identifies the concepts of displacement and overflow.

Resources:

- activity cards (worksheet)
- 5 ice cube trays or similar with ice cubes (5 without ice cubes)
- a tote tray / small container e.g. 1L ice cream container.
- a container filled with a variety of light / heavy objects / water wheel
- 8 clear plastic cups
- 4 small containers
- small amount: salt, sugar, sand, flour

Teaching strategies:

Task: Investigate the properties of water.

- activity: students investigate the properties of water including change of state, displacement, movement and as a solvent.
  - set up five different experimental stations with their accompanying information / activity guide cards.
  - divide students into small groups.
  - each group rotates between each of the five experiments.

  Station 1 – change of form (liquid to solid). Discuss how the cold of the freezer will cool the water causing it to change its state from a liquid to a solid
    - students fill an ice cube tray with water and place in the freezer section of a fridge.
    - students check the ice cube tray on a regular basis to note any changes they observe / record their findings.

  Station 2 – displacement / overflow of water. Discuss how we can find the size of an object by placing it in water. The amount of water displaced is the volume of the object. You can use a measuring cylinder to measure volume displaced.
    - students place a smaller container filled with water into an empty tote tray.
    - students then place a variety of objects eg. a rock or a student's thumb one at a time into the small container
    - students discuss their observations / record their findings.

  Station 3 – water movement. Discuss how when water is poured on a hill it always runs down hill because of gravity. Ask, what force makes the surface of the water horizontal in the container. Is this caused by gravity? What might happen on the moon (zero gravity)?

  - this activity should be set up on a concreted area such as a path (preferably on a down hill angle), also explore properties of the water in the container
    - students pour a small amount of water onto the chosen area and note its directional flow.
    - students experiment by adding a variety of objects eg. leaves, pebbles to the water flow / record their observations.

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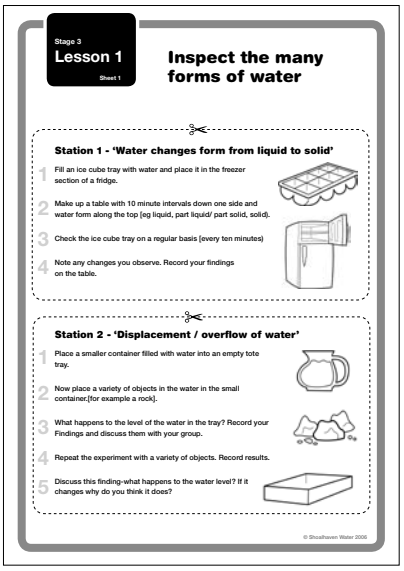

Stage 3
Lesson 1
Sheet 1

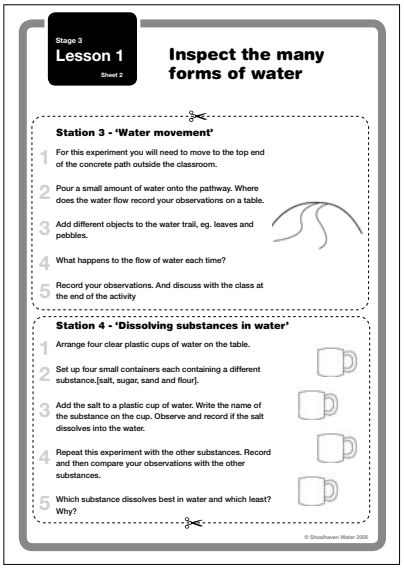
Inspect the many forms of water

Station 1 - 'Water changes form from liquid to solid'

1. Fill an ice cube tray with water and place it in the freezer section of a fridge.
2. Make up a table with 10 minute intervals down one side and water form along the top (eg liquid, part liquid/ part solid, solid).
3. Check the ice cube tray on a regular basis (every ten minutes)
4. Note any changes you observe. Record your findings on the table.

Station 2 - 'Displacement / overflow of water'

1. Place a smaller container filled with water into an empty tote tray.
2. Now place a variety of objects in the water in the small container.[for example a rock].
3. What happens to the level of the water in the tray? Record your Findings and discuss them with your group.
4. Repeat the experiment with a variety of objects. Record results.
5. Discuss this finding-what happens to the water level? If it changes why do you think it does?


Stage 3
Lesson 1
Sheet 2

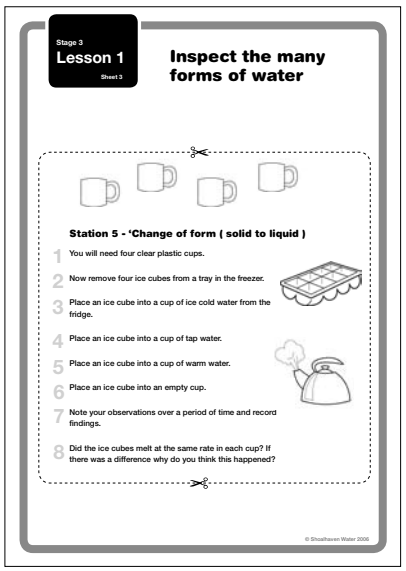
Inspect the many forms of water

Station 3 - 'Water movement'

1. For this experiment you will need to move to the top end of the concrete path outside the classroom.
2. Pour a small amount of water onto the pathway. Where does the water flow record your observations on a table.
3. Add different objects to the water trail, eg. leaves and pebbles.
4. What happens to the flow of water each time?
5. Record your observations. And discuss with the class at the end of the activity

Station 4 - 'Dissolving substances in water'

1. Arrange four clear plastic cups of water on the table.
2. Set up four small containers each containing a different substance.[salt, sugar, sand and flour].
3. Add the salt to a plastic cup of water. Write the name of the substance on the cup. Observe and record if the salt dissolves into the water.
4. Repeat this experiment with the other substances. Record and then compare your observations with the other substances.
5. Which substance dissolves best in water and which least? Why?


Stage 3
Lesson 1
Sheet 3

Inspect the many forms of water

Station 5 - 'Change of form (solid to liquid)

1. You will need four clear plastic cups.
2. Now remove four ice cubes from a tray in the freezer.
3. Place an ice cube into a cup of ice cold water from the fridge.
4. Place an ice cube into a cup of tap water.
5. Place an ice cube into a cup of warm water.
6. Place an ice cube into an empty cup.
7. Note your observations over a period of time and record findings.
8. Did the ice cubes melt at the same rate in each cup? If there was a difference why do you think this happened?

Station 4 – dissolving substances in water. Discuss the fact that water dissolves many different substances and is the most common solvent on Earth.

- 4 clear plastic cups of water.
- 4 small containers each containing a different substance.
- salt, sugar, sand and flour.
- students experiment to find which substances eg. salt, sugar will dissolve in water and which will not.
- record their findings.

Station 5 – change of form (solid to liquid). Discuss how the heat from the water will cause the ice to melt and change it from a solid to a liquid. Also note water is denser than ice, so ice floats. All other substances when turned from liquid to solid sink in their liquid.

- 4 clear plastic cups.
- students remove four ice cubes from their tray.
- place an ice cube into a cup of ice cold water from the fridge.
- place an ice cube into a cup of tap water.
- place an ice cube into a cup of warm water.
- place an ice cube into a cup.
- note observations over a period of time / record findings.
- each group then reports back its predictions, observations and recorded findings to the class group.
- discuss predictions, observations and findings / draw conclusions.

- the questions: What happens to some of the water in the displacement experiment? What makes the water flow downhill? What force makes the surface horizontal in the container? What dissolved in water?
- explain water can change its form from liquid to solid and solid to liquid. Water can be displaced and overflow. Water flows downhill because of gravity. Water can fill spaces. Water can push, pull or turn objects. A liquid has a definite volume but no fixed shape and will flow and take the shape of its container, compared to a gas which has no fixed volume.
- action: Students use activity cards then list the properties of water discovered during the experimental process.

Stage 3

Lesson 2

The importance of the Water Cycle

Outcomes:

INVS3.7
conducts investigations and makes judgements based on the results of observing, questioning, planning, predicting, testing, collecting, recording and analysing data, and drawing conclusions.

LTS3.3
identifies, describes and evaluates the interactions between living things and the effects on the environment

Resources:

- worksheet: Water Cycle
- a jug partially filled with water
- a saucepan lid
- bowl
- lunch wrap
- cup and
- food colour

Teaching strategies:

Task: To introduce and understand the concept of The Water Cycle and its importance to the environment and human survival.

- aim: to understand the processes involved in the water cycle
- activity: revise previous concepts that water can exist in different states solid (snow and ice), liquid (rain) and gas (water vapour). The process of water evaporating, forming clouds, raining, flowing to the sea and evaporating again is called the water cycle.

  - teacher demonstration / class group.

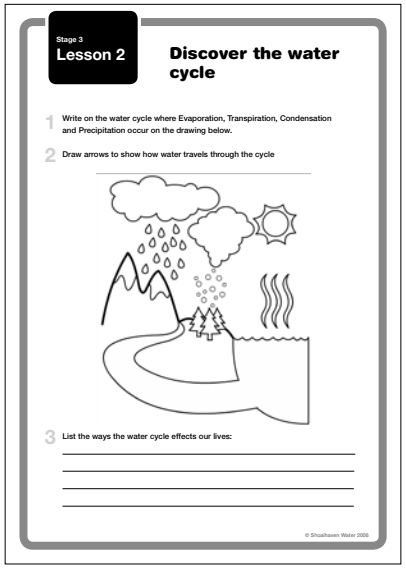
  Experiment 1:

  - teacher boils the jug.
  - students observe what happens when the jug boils. Discuss how the water becomes steam, escapes into the air and becomes a gas. Remind students that water can be a liquid, a solid or a gas.
  - the teacher then places a saucepan lid over the spout of the boiling jug for a few minutes.
  - Switch off jug, remove saucepan lid. Discuss how the lid is cooler than the steam so the water vapour condenses and forms droplets. Introduce the term “condensation.”

  Experiment: introduce the Water cycle in a bowl:

  - fill a deep glass bowl with about 2cm of warm water
  - add food colour
  - place a dry cup in the middle of the bowl
  - stretch plastic food wrap over the bowl
  - put a small weight on the wrap in the middle above the cup
  - place the experiment in the direct sun
  - keep checking for water droplets condensing on the plastic
  - after a few days see if any water has dropped into the cup
  - or introduce the water cycle using a demonstration model

- the questions: What is causing the water to turn to steam? Ask students where do the droplets come from? Observe what is in the cup in the bowl? How does “the Water Cycle” affect us?
- explain the two experiments in relation to the water cycle: Water is heated by the sun to form water vapour. This vapour rises to form clouds (condensation). Rain results when these clouds move into cold air. Water is continually moving around the Earth in the water cycle as water vapour, liquid water and ice. Evaporation increases with higher temperatures and stronger winds. Trees also lose water vapour through their leaves (Transpiration).The water vapour in the air is known as humidity.
- action: students break into groups: brainstorm / list ways the water cycle affects our environment and in turn our lives then groups share their ideas with the class group / discuss.


Stage 3
Lesson 2

Discover the water cycle

1 Write on the water cycle where Evaporation, Transpiration, Condensation and Precipitation occur on the drawing below.

2 Draw arrows to show how water travels through the cycle

3 List the ways the water cycle effects our lives:

Stage 3

Lesson 3

Investigate the amount of fresh water

Outcomes:

INVS3.7
conducts investigations and makes judgements based on the results of observing, questioning, planning, predicting, testing,collecting, recording and analysing data and drawing conclusions.

LTS3.3
identifies, describes and evaluates the interactions between living things and their effects on the environment.

ENS3.7
describes how Australian people, systema and communities are globally interconnected and recognise global responsibilities.

ENS3.6
explains how beliefs and practices influence the ways in which people interact with change and value their environment.

Resources:

- a bucket
- a teacup
- a teaspoon
- water

Teaching strategies:

Task: To investigate: Where is water found on Earth? Is all water on Earth the same? How much water is available for human consumption?

- aim: to investigate the importance of water for humans
- activity: in groups students brainstorm / list the various places where water is found on Earth. Groups then report back to class group / discuss and list findings.
- teacher may need to explain that water can also be found in underground aquifers and wells. Discuss that all water on Earth is not the same - there is fresh water and salt water. Some water is trapped underground or flows quickly down rivers and into the sea, so we can't access it.
  - investigate how much water is available for human consumption?
  - Experiment 1: teacher / demonstration: perform experiment (as performed in play)
  - students stand in a circle and take turns to add cups of water to a tank (or fill 1 bucket). Tell them that this represents the worlds entire water resource [1,260,000,000,000,000,000,000 litres]
  - take out 2 cups.What is left in the bucket represents the oceans - 98% of the world's water is no good to people, animals and plants
  - 2 cups represents the freshwater on earth - 2% of world supply
  - of this freshwater 1.6 cups represents water locked up in the polar ice caps - 1.6% of world supply
  - take out 0.4 cups (or a teaspoon). All but a drop is in underground aquifers and wells - 0.36%
  - one drop is all the water we have left for us and the plants and animals, in lakes rivers etc - 0.04%
- the questions: What does this experiment demonstrate about the Earth`s water? Did students realise that such a small part of the water on the earth is fresh? What else needs water? Ask: do any plants or animals not need water? Is all freshwater usable? What will happen if we don't look after water?
- explain that one drop is all the water we have left for us, the plants and the animals, and that we need to look after our water resource as it is not only humans who need water. Introduce the concept of "resource" i.e. water is a resource to be used wisely. All plants and animals need water to survive. There are many more plants and animals in rainforests than deserts and there is more life where there is more water.

Stage 3

Lesson 4

Inspect how we use water

Outcomes:

INVS3.7
conducts investigations and makes judgements based on observing, questioning, planning, predicting testing, collecting and analysing data, and drawing conclusions.

VAS3.5
works co-operatively with others in groups on scientific tasks and challenges.

ENS3.5
demonstrates an understanding of the interconnectedness between Australia and global environments and how individuals and groups can act in an ecologically responsible way.

ENS3.6
explains how various beliefs and practices influence the way in which people interact with, change and value their environment.

DES3.1
displays and interprets data in graphs with scales of many one to one correspondence.

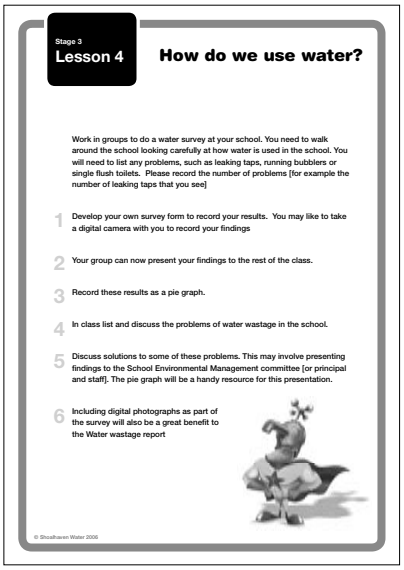
Resources:

- survey sheet (worksheet)
- clipboards
- pens / pencils

Teaching strategies:

Task: To investigate human use of water as a resource

- aim: to investigate this usage within the context of the school environment and to record information in the form of a column / pie graph.
- activity: to consolidate the concept of a "resource" and discuss what a resource is
  - as a class group brainstorm and list how we use water as a resource.
  - record these results as a column / pie graph
  - in groups: students survey the school environment / list any problems regarding water wastage. Document the school's water consumption before any action is taken to save water
- the questions: Do we use water wisely? What is the main problem with the way we use water in our town? How do we waste water?
- explain how we waste water such as running or dripping taps, leaking pipes, long showers, hosing paths and driveways.
- actions: students discuss possible solutions to prevent water wastage at school and ways to conserve water within the school environment.
  - signs to remind students to turn off taps.
  - identify if any of the troughs could have water restrictors fitted
  - installation of a water tank to collect stormwater, which can be used for watering school gardens
  - use of mulch to stop water evaporation.
  - list the ways water is used in the school and estimate the quantity of water consumed for each us
  - set water saving targets for the school to meet to reduce its water consumption


Stage 3
Lesson 4

How do we use water?

Work in groups to do a water survey at your school. You need to walk around the school looking carefully at how water is used in the school. You will need to list any problems, such as leaking taps, running bubblers or single flush toilets. Please record the number of problems [for example the number of leaking taps that you see]

1 Develop your own survey form to record your results. You may like to take a digital camera with you to record your findings

2 Your group can now present your findings to the rest of the class.

3 Record these results as a pie graph.

4 In class list and discuss the problems of water wastage in the school.

5 Discuss solutions to some of these problems. This may involve presenting findings to the School Environmental Management committee [or principal and staff]. The pie graph will be a handy resource for this presentation.

6 Including digital photographs as part of the survey will also be a great benefit to the Water wastage report

Stage 3

Lesson 5

Stop wasting water and help Tapstar save water

Outcomes:

ENS3.5
demonstrates an understanding of the interconnectedness between Australia and global environments and how individuals and groups can act in a responsible way.

LTS3.3
identifies, describes and evaluates the interactions between living things and their effect on the environment.

DRAS3.2
interprets and conveys dramatic meaning by using elements of drama and a range of movement and voice skills

DRAS3.3
devises, acts and rehearses drama for performance to an audience.

VAS3.3
makes artworks for different audiences, assembling materials in different ways.

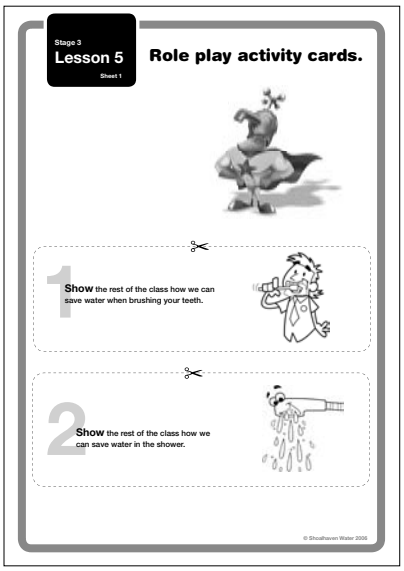
Resources:

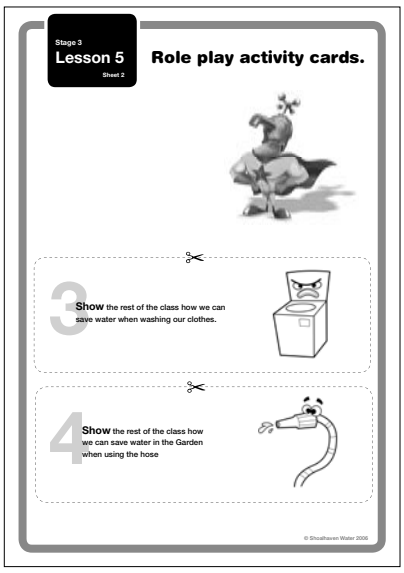
- drama activity cards (Stage 3 Lesson 5 worksheet)
- art paper
- a variety of media eg. oil pastel crayons, water colours, paints, ink washes coloured pencils, materials for collage

Teaching strategies:

Task: To reinforce the concept of "stop wasting water."

- aim: To role play how water can be saved and students can change their environment.
- activity: role play / dramatise various scenarios for conserving water.
  - divide students into small groups.
  - give each group an activity card eg. turn off the tap when cleaning your teeth.
  - each group improvises a short skit to convey the message based on their activity card.
  - each group performs their skit for the class.
- the questions: you see someone washing vegetables or plates while the tap is running - what do you do? Students at school are playing with and wasting water - what do you do? Ask students to role play.
- action: students use role play activity cards then create their own poster based around the theme: "Stop wasting water."





Stage 3

Lesson 6

Junior water inspectors: identify the problems with water in the world

Outcomes:

INVS3.7
conducts investigations and makes judgements based on the results of observing, questioning, planning, predicting, testing, collecting, recording and analysing data, and drawing conclusions.

VAS3.5
works co-operatively with others in groups on scientific tasks and challenges.

UTS3.9
evaluates, selects and uses a range of equipment, computer based technology, materials and other resources to meet the requirements and constraints of investigation tasks.

ENS3.5
demonstrates an understanding of the interconnectedness between Australia and global environments and how individuals and groups can act in an ecologically responsible manner.

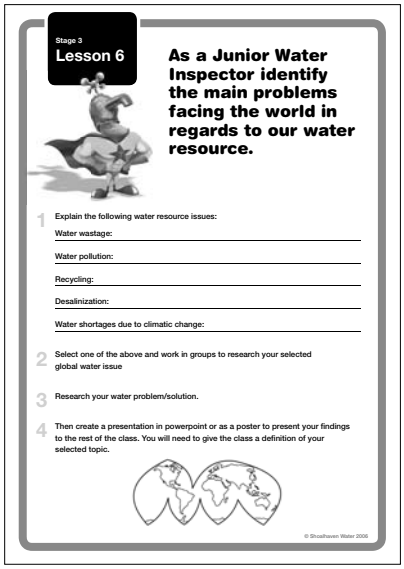
Resources:

- worksheet – research guide
- computers
- power point presentation software

Teaching strategies:

Task: - To identify the problems facing the world in regards to our water resource.

- aim: to identify the major issues facing the world in regards to water
- activity: as a class group discuss / list the main problems we face in regards to our water resource.
  - wastage
  - water shortages due to climatic change and drought.
  - water pollution.
  - overuse
  - discuss and brainstorm ideas and possible solutions to solve these problems, drawing on students' general knowledge.
  - students are broken into small groups and allocated a particular area of research eg. water recycling.
  - each group then researches their particular area and creates a presentation.
- The question: ask if they know the term used to describe a time when there is very little rainfall. Explain this is a drought.
- explain some of the solutions being considered by society and introduce the concepts:
  - recycling
  - desalination
  - prevention of pollution etc.
- action: investigate possible solutions to these water problems. Create a poster or powerpoint presentation outlining possible solutions. Each group then presents their presentation to the class.
- Students take the Tapstar Quiz - Stage 3


Stage 3
Lesson 6

As a Junior Water Inspector identify the main problems facing the world in regards to our water resource.

1 Explain the following water resource issues:

Water wastage:

Water pollution:

Recycling:

Desalinization:

Water shortages due to climatic change:

2 Select one of the above and work in groups to research your selected global water issue

3 Research your water problem/solution.

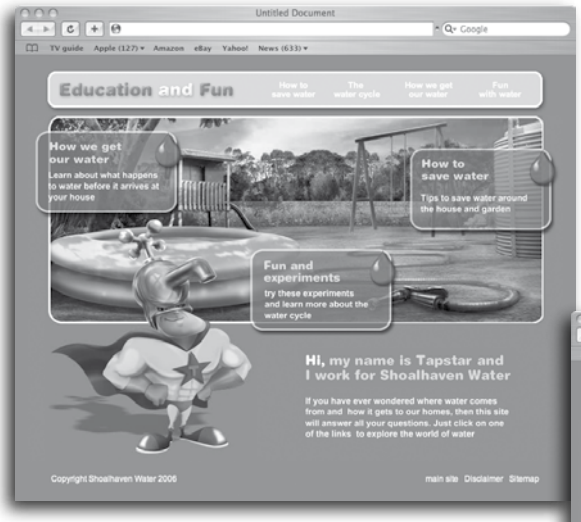
4 Then create a presentation in powerpoint or as a poster to present your findings to the rest of the class. You will need to give the class a definition of your selected topic.

Website

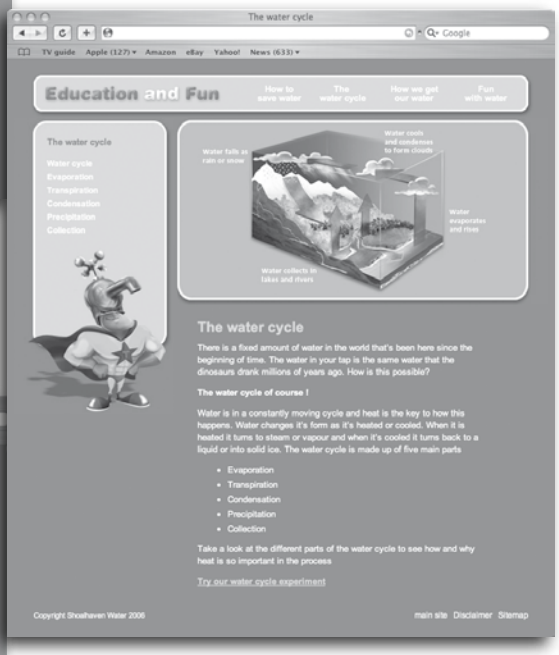
The Tapstar Waterwise Education Program website

As part of the Waterwise Education Program, Shoalhaven Water has developed a new website for children that provides information about the water cycle, the water treatment process and how to save water in and around the home.

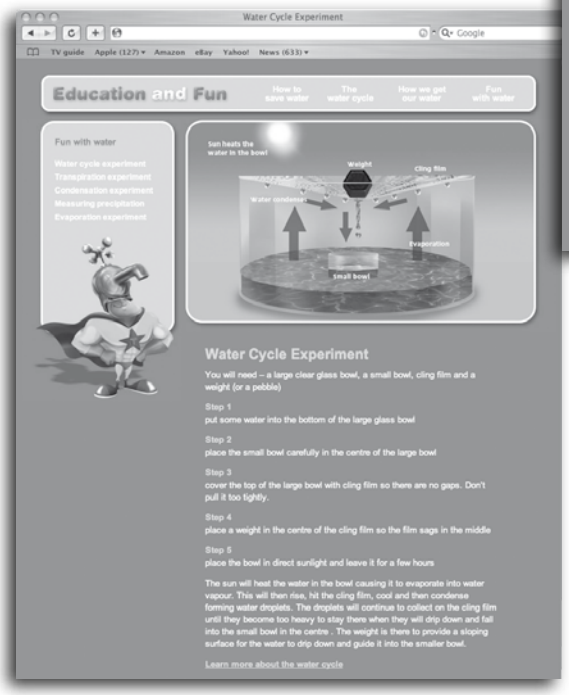
The site provides an easy-to-navigate journey through the processes that water undergoes from falling as rain, to arriving in our homes. There are clear and informative illustrations at every stage, as well as numerous fun experiments for children to carry out that bring the whole process to life. The site can be found in the education section of the Shoalhaven Water website at www.shoalwater.nsw.gov.au.



Left: Clear easy-to-use navigation into the different sections of the site



Right: Informative illustrations and clear explanations of the processes that water undergoes



Left: Fun experiments that are easy to set up at school or at home

Survey

Teacher survey for the Tapstar Waterwise Education Kit

Please forward completed survey to:

Ben Stewart
Tapstar Waterwise Education Program
PO Box 42
Nowra NSW 2541

A printable version of this survey can be found on the CD at the back of this book

	Response
1. The Tapstar Teaching kit is part of an integrated program that includes the Tapstar show and lesson plans for each stage of primary school. Do you think the lessons compliment the drama performance?	
2. How clearly were the water conservation messages presented in this kit? If not please supply details.	
3. Can you suggest any additional teaching/learning strategies not covered in the kit that would reinforce the central messages of the play?	
4. Did each lesson of the kit satisfy the stated curriculum outcomes? If not please supply details.	
5. Did you find that the activities and experiments in the kit were age appropriate? If not please supply details.	
6. Do you have any other comments about this teaching kit?	
7. Did you find the kit difficult or easy to use?	

References

References

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Lucas E (1991) *Water a Resource in Crisis*. Chicago: Childrens Press

Morgan S (2000) *Water for All* London Franklin Watts

Nankivell-Aston S&D Jackson, (2003) *Science Experiments with Water*, Franklin Watts, Alexandria, Australia

Roddick Q (2004) Troubled Water *Saints, Sinners, Truths and lies about the Global Water Crisis*, Anita Roddick Publications Ltd, West Sussex, UK

Rosenfeldt, R. 1980 *Tiddalick: The frog who caused a flood*, Puffin Books

Taffford C and J Oakley (2003) *Where does the Poo Go?* Eltram Pty Ltd, Australia

Water Board and CSIRO Double helix (no date) *The Streamwatch: Water Bug Detective Guide*

Winter B, *Living Sustainably Series Water and Storm Water Unit CSF11* Level 3, Gould League Australia and EPA Victoria

Zion, G 1992, *Harry the dirty Dog*, Random House Children's Books, London.

Other useful websites

http://livescience.com

http://education.melbournewater.com.au/

http://www.yvw.com.au/waterschool/juniors.html

http://www.savewater.com.au/

Notes

Notes

Shoalhaven Water
Bridge Road
Nowra

Tel 02 4429 3244
Email water@shoalhaven.nsw.gov.au
Web www.shoalwater.nsw.gov.au

Shoalhaven Water

A Group Of Shoalhaven Council

Stage 1

Stage 1

Lesson 2

Tapstar and friends investigate the properties of water.

1

When you take a tray of water out of the freezer what does the water look like?

Tip the water out of the tray onto a plate.

Draw what the water looks like now.

Why is Drippette shivering?

Why is Tapdog fanning?

2

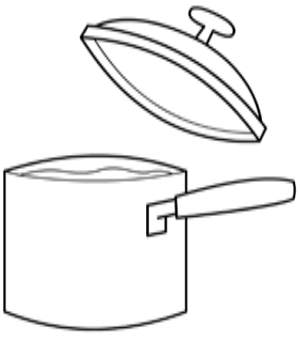
When you place a cube of ice out in the sun or into boiling water, what happens to it and where does the water go?

Draw what happens when the ice cube is put into the boiling water or the sun.

3

Your teacher will boil water in a covered saucepan. What can you see on the inside of the saucepan lid when it is taken off?

Draw what you see on the lid of the saucepan.



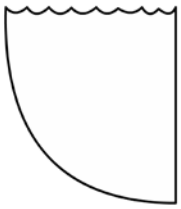
Stage 1

Lesson 3

Sheet 1

Tapstars friends discover the water cycle

Cut out or copy pictures and place on the water cycle drawing (sheet 2)



Ocean

Cloud

Tapdog

River

Rain

Oscar

Steam

Trees

Drippette

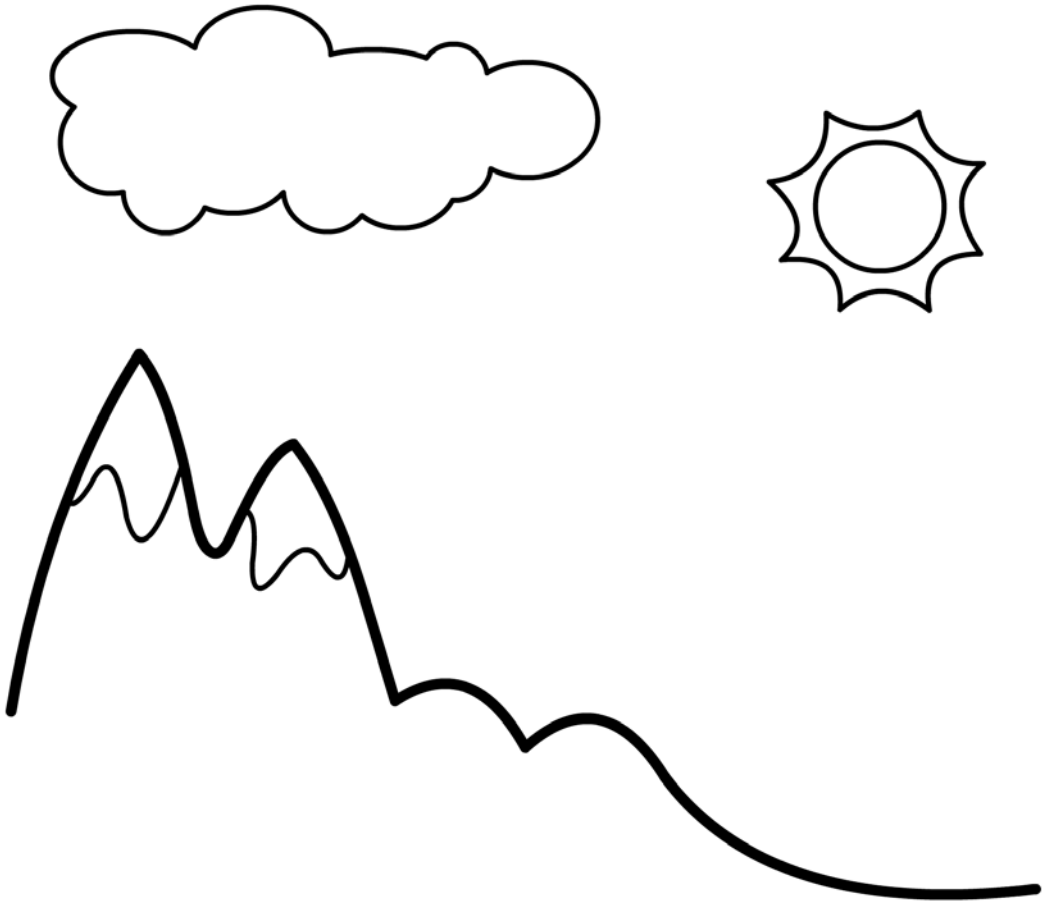
Stage 1

Lesson 3

Sheet 2

Tapstar discovers the water cycle

1 Paste or draw pictures of the rain, steam, river and oceans on the water cycle below:



2 Now use this drawing to help you follow a water drop through the cycle

Stage 1

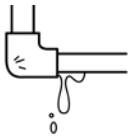
Lesson 5

School Water Survey

When you walk around the school can you see any water being wasted? You may see a leaking tap or pipe. Do the toilets have a full flush? Tick the box if you see any of these ways that water is wasted.

Your school may already be saving water. Does your school have any water tanks? Is there Mulch on the Garden beds? Tick the box if you see any of these ways of saving water.

Wasting water

Where are you inspecting?	Toilets	Playground		
	Tick here	Tick here	Tick here	Tick here
 Dripping tap				
 Leaking pipe				
 Single flush				

Save water

 Dual flush				
 Water tank				
 Garden mulch				

With your teachers help make a picture graph showing how your school wastes water and how it saves water. Draw a simple map depicting water use in the school.

Stage 1

Lesson 6

Sheet 1

Role play activity cards.

1

Show the rest of the class how we can save water when brushing your teeth.

2

Show the rest of the class how we can save water in the shower.

Stage 1

Lesson 6

Sheet 2

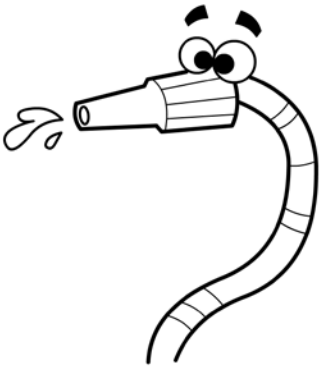
Role play activity cards.

3

Show the rest of the class how we can save water when washing our clothes.

4

Show the rest of the class how we can save water in the Garden when using the hose



Stage 1

Lesson 6

Sheet 3

Stop wasting water song

When in the laundry you've got to get it right
Use a front loader it's being very bright
Next time you've only got a half a load
Just wait till you've got more dirty clothes

Think it oh, oh ver
Think it oh, oh ver

Stop wasting water
Before it all runs out
Stop wasting water
Before it all runs out

Think it oh, oh ver
Think it oh, oh ver

When cleaning driveways you should never use a hose
Just use the broom or rake you know how it goes
Next time you need to wash your motor car
Just use a bucket and wash it on the grass

Think it oh, oh ver
Think it oh, oh ver

When having showers you'd better keep it short.
Brushing your teeth please turn the water off
Next time that you need to use the looooo
1/2 flush for one's and full for two's

Think it oh, oh ver
Think it oh, oh ver

Stop wasting water
Before it all runs out
Stop wasting water
Before it all runs out

Think it oh, oh ver

STOP!

Stage 1

Lesson 6

Sheet 4

Don’t let the Tap Go Drip song

If You want to save water clap your hands
Clap Clap Clap clap
You'll help the environment and the land
Clap Clap Clap clap
Now Only use water when you need it
And don't let the tap go drip drip
And don't let the tap go drip drip drip.

When you brush your teeth turn the Tap off
Turn Turn Turn Turn
Otherwise it will go down the plughole
Turn Turn Turn Turn
Now Only use water when you need it
And don't let the tap go drip drip
And don't let the tap go drip drip drip.

When you have a short shower you'll sing this song
Clap Clap Clap clap
Save water otherwise it will be gone
Clap Clap Clap clap
Now Only use water when you need it
And don't let the tap go drip drip
And don't let the tap go drip drip drip

If You want to save water clap your hands
Clap Clap Clap clap
You'll help the environment and the land
Clap Clap Clap clap
Now Only use water when you need it
And don't let the tap go drip drip
And don't let the tap go drip drip drip

And don't let the tap go drip drip drip.

Stage 1

Tapstar Quiz for Stage One

1 Can water move? Does it flow? _____

2 Is water always a liquid? _____

3 When water falls as rain onto a hill what happens to it? _____

4 Water is found in the ocean can you think of anywhere else on the Earth where water is found? _____

5 Why do we need water? _____

6 How can you save water? _____

Stage 2

Stage 2

Lesson 1

Investigate the properties of water

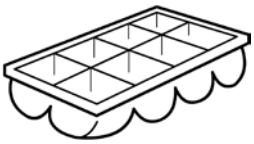
What can water do? See how it can push, flow down hill and fill spaces.

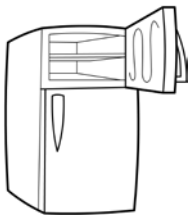
How does water change?

1

Liquid to Solid

Fill an ice cube tray with water and place it in the freezer section of a fridge.





Draw what the water looks like now _____

2

Liquid to Gas

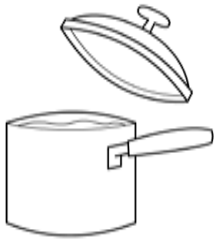
Your teacher will boil water in a jug. What is coming out of the jug? Is it hot?

The name for this is E _____

3

Gas to liquid

Your teacher will put a saucepan lid over the steam. What can you see on the inside of the saucepan lid when it is taken off?



Draw what you see on the lid of the saucepan _____

The name for this is C _____

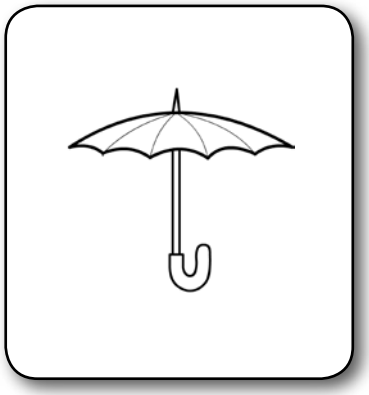
Stage 2

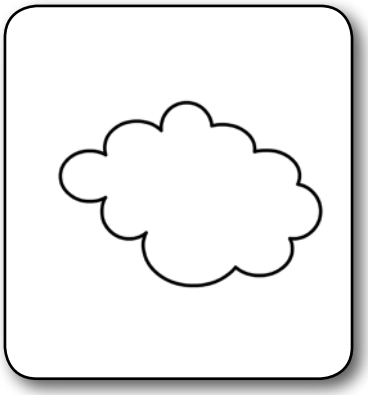
Lesson 2

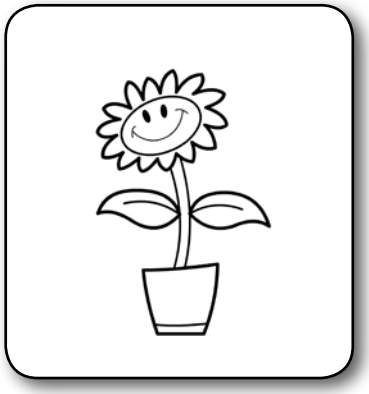
Sheet 1

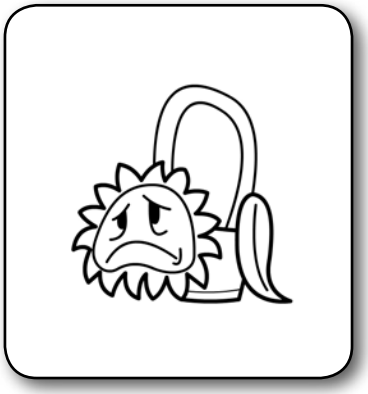
Friends of Tapstar follow the water cycle

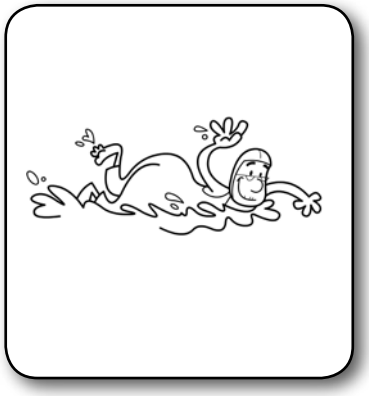
Cut out pictures and place on the water cycle drawing

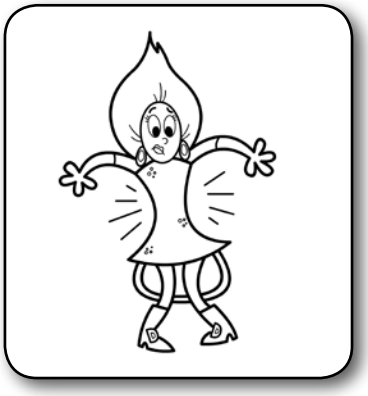


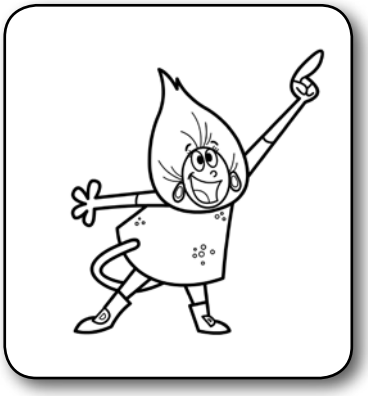












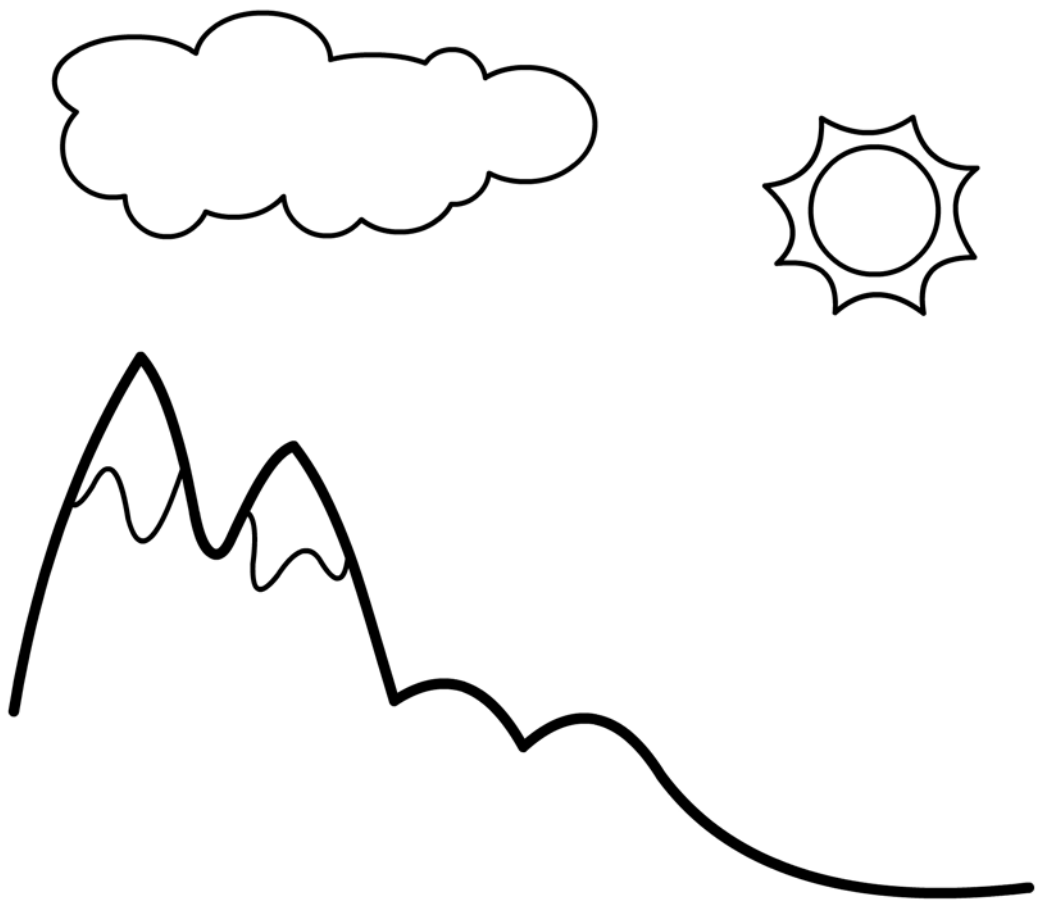
Stage 2

Lesson 2

Sheet 2

Friends of Tapstar follow the water cycle

1 Paste or draw pictures of the rain, steam ocean and river on the water cycle below:



2 Now use this drawing to help you make a list of the ways that the water cycle effects our everyday lives and draw arrows to show how water travels through the cycle

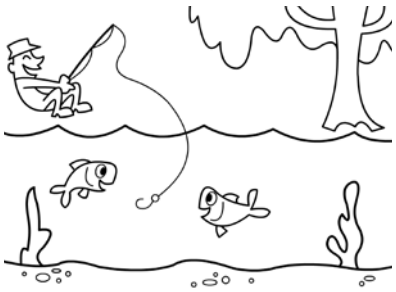
Stage 2

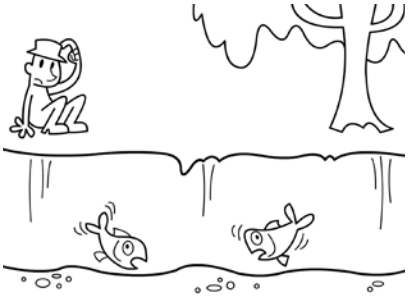
Lesson 4

As a Water Inspector find out how humans use water and the damage we have done to our environment

Work in small groups, at the computer, to research how and where we use water.

list any problems that we face in the world because of our water use.





Ways we use water and where we use it

Problems we face in the world because of how we have misused water

Report back your findings to the whole class.

Stage 2

Lesson 5

As a Water Inspector Prevent Wastage of Water in the School Environment

Work in groups to do a water survey at your school.

You need to walk around the school looking carefully at how water is used in the school. You will need to list any problems, such as leaking taps or running bubblers, single flush toilets or no mulch on the garden. Find the school water meter.

Please record the number of problems [for example the number of leaking taps that you see]

List the problems you find:

Record the number of problems you find:

Report back your findings to the whole class.

Stage 2

Lesson 6

Sheet 1

Role play activity cards.

1

Show the rest of the class how we can save water when brushing your teeth.

2

Show the rest of the class how we can save water in the shower.

Stage 2

Lesson 6

Sheet 2

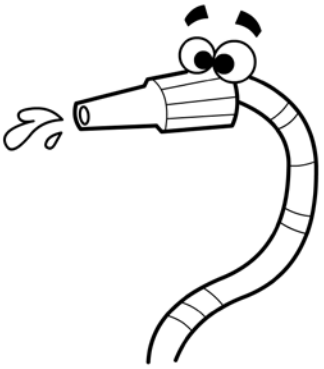
Role play activity cards.

3

Show the rest of the class how we can save water when washing our clothes.

4

Show the rest of the class how we can save water in the Garden when using the hose



Stage 2

Lesson 6

Sheet 3

Stop wasting water song

When in the laundry you've got to get it right
Use a front loader it's being very bright
Next time you've only got a half a load
Just wait till you've got more dirty clothes

Think it oh, oh ver
Think it oh, oh ver

Stop wasting water
Before it all runs out
Stop wasting water
Before it all runs out

Think it oh, oh ver
Think it oh, oh ver

When cleaning driveways you should never use a hose
Just use the broom or rake you know how it goes
Next time you need to wash your motor car
Just use a bucket and wash it on the grass

Think it oh, oh ver
Think it oh, oh ver

When having showers you'd better keep it short.
Brushing your teeth please turn the water off
Next time that you need to use the looooo
1/2 flush for one's and full for two's

Think it oh, oh ver
Think it oh, oh ver

Stop wasting water
Before it all runs out
Stop wasting water
Before it all runs out

Think it oh, oh ver

STOP!

Stage 2

Lesson 6

Sheet 4

Don’t let the Tap Go Drip song

If You want to save water clap your hands
Clap Clap Clap clap
You'll help the environment and the land
Clap Clap Clap clap
Now Only use water when you need it
And don't let the tap go drip drip
And don't let the tap go drip drip drip.

When you brush your teeth turn the Tap off
Turn Turn Turn Turn
Otherwise it will go down the plughole
Turn Turn Turn Turn
Now Only use water when you need it
And don't let the tap go drip drip
And don't let the tap go drip drip drip.

When you have a short shower you'll sing this song
Clap Clap Clap clap
Save water otherwise it will be gone
Clap Clap Clap clap
Now Only use water when you need it
And don't let the tap go drip drip
And don't let the tap go drip drip drip

If You want to save water clap your hands
Clap Clap Clap clap
You'll help the environment and the land
Clap Clap Clap clap
Now Only use water when you need it
And don't let the tap go drip drip
And don't let the tap go drip drip drip

And don't let the tap go drip drip drip.

Stage 2

Tapstar Quiz for Stage 2

1 Water is not just a liquid. What other forms can water take?

2 What is the water cycle? How does the water cycle affect our daily lives?

3 Where is water found on earth? eg Oceans. How much of the worlds water is available for us to use?

4 How do humans use water?

5 What problems do we make when we use water?

6 How was water wasted in your school grounds? How can we stop this happening?

Stage 3

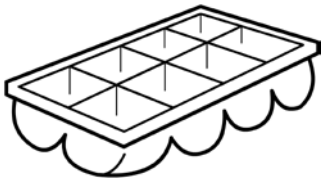
Stage 3

Lesson 1

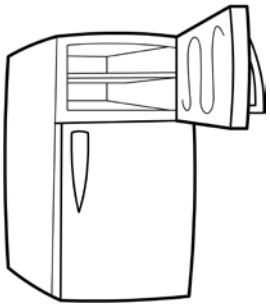
Sheet 1

Inspect the many forms of water

Station 1 - 'Water changes form from liquid to solid'



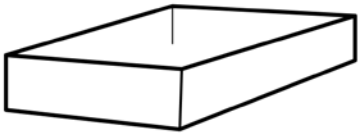
1. Fill an ice cube tray with water and place it in the freezer section of a fridge.
2. Make up a table with 10 minute intervals down one side and water form along the top [eg liquid, part liquid/ part solid, solid).
3. Check the ice cube tray on a regular basis [every ten minutes)
4. Note any changes you observe. Record your findings on the table.



Station 2 - 'Displacement / overflow of water'

1. Place a smaller container filled with water into an empty tote tray.
2. Now place a variety of objects in the water in the small container.[for example a rock].

3. What happens to the level of the water in the tray? Record your Findings and discuss them with your group.
4. Repeat the experiment with a variety of objects. Record results.
5. Discuss this finding-what happens to the water level? If it changes why do you think it does?



Stage 3

Lesson 1

Sheet 2

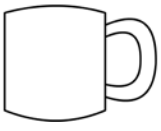
Inspect the many forms of water

Station 3 - 'Water movement'

1. For this experiment you will need to move to the top end of the concrete path outside the classroom.
2. Pour a small amount of water onto the pathway. Where does the water flow record your observations on a table.
3. Add different objects to the water trail, eg. leaves and pebbles.
4. What happens to the flow of water each time?
5. Record your observations. And discuss with the class at the end of the activity

Station 4 - 'Dissolving substances in water'

1. Arrange four clear plastic cups of water on the table.
2. Set up four small containers each containing a different substance.[salt, sugar, sand and flour].
3. Add the salt to a plastic cup of water. Write the name of the substance on the cup. Observe and record if the salt dissolves into the water.
4. Repeat this experiment with the other substances. Record and then compare your observations with the other substances.
5. Which substance dissolves best in water and which least? Why?

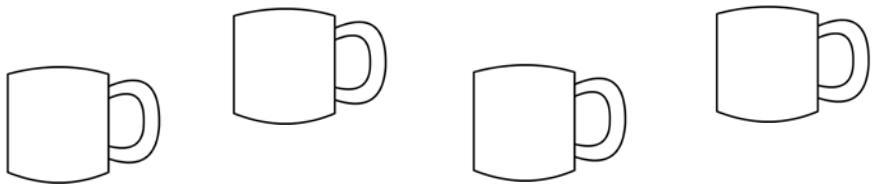


Stage 3

Lesson 1

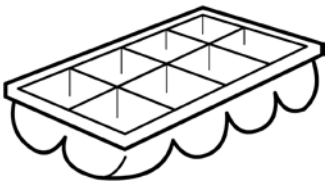
Sheet 3

Inspect the many forms of water



Station 5 - 'Change of form (solid to liquid)

1. You will need four clear plastic cups.
2. Now remove four ice cubes from a tray in the freezer.



3. Place an ice cube into a cup of ice cold water from the fridge.
4. Place an ice cube into a cup of tap water.

5. Place an ice cube into a cup of warm water.
6. Place an ice cube into an empty cup.
7. Note your observations over a period of time and record findings.
8. Did the ice cubes melt at the same rate in each cup? If there was a difference why do you think this happened?

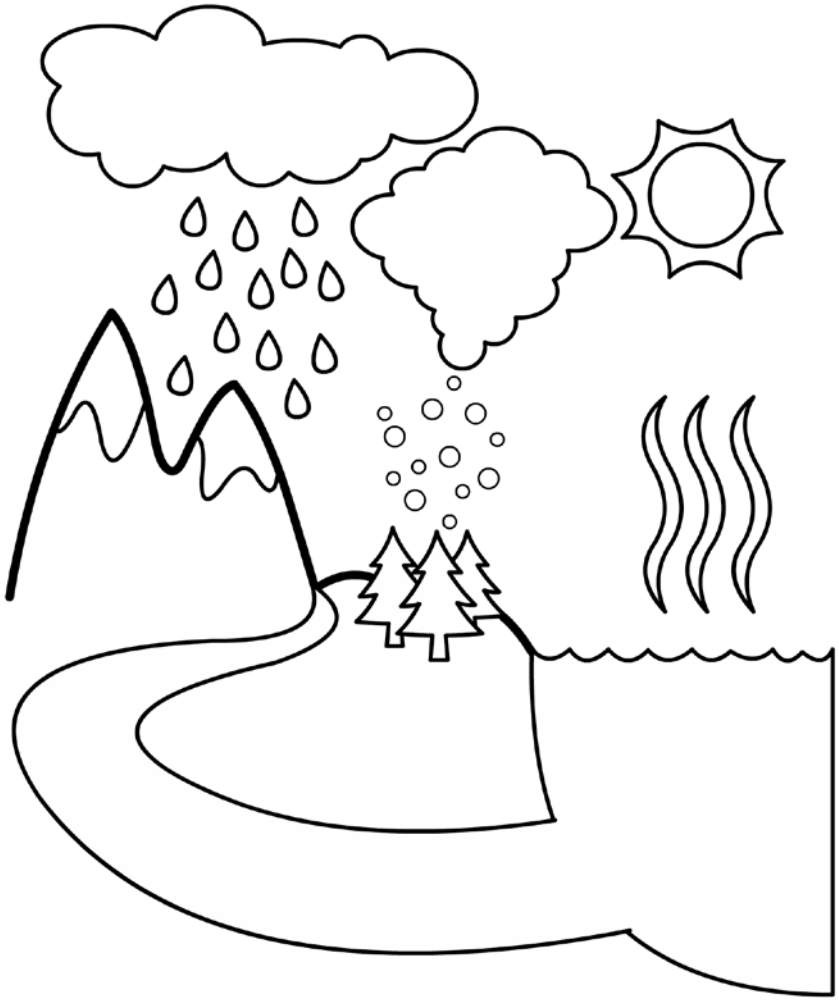
Stage 3

Lesson 2

Discover the water cycle

1 Write on the water cycle where Evaporation, Transpiration, Condensation and Precipitation occur on the drawing below.

2 Draw arrows to show how water travels through the cycle



3 List the ways the water cycle effects our lives:

Stage 3

Lesson 4

How do we use water?

Work in groups to do a water survey at your school. You need to walk around the school looking carefully at how water is used in the school. You will need to list any problems, such as leaking taps, running bubblers or single flush toilets. Please record the number of problems [for example the number of leaking taps that you see]

1. Develop your own survey form to record your results. You may like to take a digital camera with you to record your findings

2. Your group can now present your findings to the rest of the class.

3. Record these results as a pie graph.

4. In class list and discuss the problems of water wastage in the school.

5. Discuss solutions to some of these problems. This may involve presenting findings to the School Environmental Management committee [or principal and staff]. The pie graph will be a handy resource for this presentation.

6. Including digital photographs as part of the survey will also be a great benefit to the Water wastage report

Stage 3

Lesson 5

Sheet 1

Role play activity cards.

1

Show the rest of the class how we can save water when brushing your teeth.

2

Show the rest of the class how we can save water in the shower.

Stage 3

Lesson 5

Sheet 2

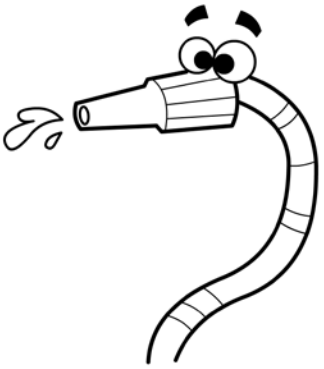
Role play activity cards.

3

Show the rest of the class how we can save water when washing our clothes.

4

Show the rest of the class how we can save water in the Garden when using the hose



Stage 3

Lesson 6

As a Junior Water Inspector identify the main problems facing the world in regards to our water resource.

1 Explain the following water resource issues:

Water wastage: _____

Water pollution: _____

Recycling: _____

Desalinization: _____

Water shortages due to climatic change: _____

2 Select one of the above and work in groups to research your selected global water issue

3 Research your water problem/solution.

4 Then create a presentation in powerpoint or as a poster to present your findings to the rest of the class. You will need to give the class a definition of your selected topic.

Stage 3

Tapstar Quiz for Stage 3

1 Name three ways water can change form?

2 Describe the natural water cycle on Earth? You can draw a diagram but label it carefully. How does the water cycle affect our lives?

3 Where is water found on Earth? How much water is available for us and the animals?

4 Do humans always use water wisely? How do we sometimes waste water?

5 Make up a sign for the following spots in your home to remind your family not to waste water? Bathroom, Toilet, Laundry, Kitchen, Garden, Drive way.

6 What do you think is the main water resource problem the world faces? How would you solve this problem?