CapeNature Cubs Club
Kids Conserving Nature

GROUPS

Cubs Club lesson plan for
catchment to coast: water watchers

Use this lesson plan to support your action projects for this term.

Date

Febuary 2026 to April 2026

Duration

Between 1 hour and 1 day (depending on projects selected)

Support material from toolbox

Mini-SASS tub and magnifying glasses





Newsletter name Water Watchers

Theme Catchment to Coast - Water

Key message We need to save water for our futures

Topics covered

Catchment to Coast (optional on programme)

- Water sources are connected
- Water pollution (Soluble and insoluble substances/things that pollute water)

Water scarcity

- Concept of water scarcity and finite resources
- How our water sources can be protected
- The water cycle is covered in a few of the action projects

Curriculum links

Subject: Natural Sciences and Technology

Grade 6

- **Strand:** Mixtures and Water Resources
- **Topic:** Water Pollution

Grade 4

- **Strand:** Life and Living
  - **Topic 1:** What Plants Need to Grow
  - **Topic 2:** Structure of Plants

- **Strand:** Matter and Materials
- **Topic:** Materials Around Us – The Water Cycle

Outcomes

Know

- Water is scarce and a finite resource
- Two new ways that water can be saved
- What happens upstream, affects all our waterways, including the ocean

Do

- Actively do something to save water
- Skills from participating in activities e.g. listening, reading

Value

- Believe that it is our responsibility to protect our water sources
- Believe that our water is irreplaceable and that without it, humans will be unable to survive

LESSON PLAN

1. Introduction

THINGS TO REMEMBER BEFORE STARTING YOUR LESSON

- Introduce staff
- Outline of the day/what to expect
- Rules of engagement
- Safety brief
- Divide into groups if applicable

SETTING THE SCENE/TUNING-IN

You want to teach the group a little bit about the catchment to coast concept, but the focus will be on water scarcity and saving.



TUNING IN TO THE CATCHMENT TO COAST CONCEPT OPTION 1

ACTIVITY

STORYTELLING
KAI HELPS HIS FRIEND CLEAN THE BEACH

DURATION

20 minutes

RESOURCES

Kai & Friends Book – Kai helps his friend clean up the beach

CIRRICULUM LINK

Natural Science and Technology Grade 6 / Strand: Matter and Materials / Topic: Water pollution

Read the Kai helps his friend clean up the beach story:

1. **Paragraph 2** end – ask learners to help Kai's mom wake him up by giving a growl.
2. **Paragraph 5** – ask learners to show you how Kai could stalk Curtis now that he spotted him and then pounce on Curtis! You can halve the class or let them divide into pairs, one stalking the other. Those being stalked like Curtis can, crawl sideways.
3. **Paragraph 14** – READ TWICE and ask the learners how they think all the rubbish ended up on the beach with Curtis.
4. **Paragraph 20** – ask some of the learners to pretend to be Curtis and show us how he would be running to get his litter and get it in the trash. Then ask how you think the animals in the ocean would feel if the plastic entangled them. Let the learners cry.
5. **After the story** ask learners how they think water like the ocean becomes polluted. Start with in the home. If they think of their homes and all the things they flush down the drain or the sink, like dirt after having a bath or the dirt off a plate of food when washed. This water finds its way down the pipes to underground sewer pipes and then to a wastewater treatment plant. Here the water is treated and is eventually released back into the environment. Other things that pollute water include soap, car shampoo, grass, leaves, oil poured into water. What else can the group think of?
6. **Explain** again that in nature water flows from the top of the mountains down streams into rivers and eventually makes its way into the ocean. This is known as catchment to coast – and it also means that whatever pollution like litter or pollution from factories etc. enters the water inland, will eventually end up in the ocean. Use Kai's home in the mountain as an example. If people living near a mountain for example threw litter out the car window, the wind could pick it up and it could travel and end up in a river near where Kai lives. Maybe a butcher discards offal behind his stall and when it rains the water carries the blood to the river. Maybe someone who has made fish and chips throws the cooking oil down the drain – it will end up in the river. This polluted water would then move all the way down the mountain all the way to the beach where Curtis lives.



KAI AND HIS FRIEND

help clean up the beach

P1 One day, as Kai, the leopard cub, was lying on his back, warming his full tummy in the sun, he was thinking about the class he had attended with his mom, brother, and sister the previous day. It was about survival, the importance of helping your friends and caring for your environment. It all sounded a bit boring, far-fetched and un-adventurous! His mom had caught him dosing off in class.

P2 "Wake up, Kai!" reprimanded his mom, "For homework, you can show us how helping a friend can help save the environment and our lives."

P3 Kai was not sure where to start. He decided that it would be best to talk to his clever friend, Curtis the ghost crab, who was quite brainy (as well as bossy), and always loved to come up with a good plan.

Note that all stop points in the story are marked as follows e.g. Paragraph 5 = P5



P4 It was early morning, and Kai pranced off down the hill all the way to the small beach. He knew that Curtis enjoyed snacking on the shoreline before all the visitors arrived. He looked around but Curtis was hard to spot as he was a pale colour, similar to the sand, and he loved burrowing away, hiding from predators and the sun.

P5 "Hey Curtis," yelled Kai, as he spotted him racing sidewards across the beach. "What's for breakfast?"

P6 "Goodness, Kai, you nearly scared the shell off me", grumbled Curtis. "Don't practice your stalking techniques on me again! I'm having a delicious white mussel and sea lettuce sandwich. I couldn't find any turtle eggs this morning."

P7 "Well, I've told you not to eat turtle eggs! They are very rare, although I know they're a delicacy for you! Sorry I scared you, Curtis," said Kai, as he put his head on his paws, "but I'm in trouble and need your help."

P8 Kai shared his story with Curtis, who scratched his shell with one pincer and completed a 360 degree swivel with his beady eyes that stood out on stalks.

P9 "Well," said Curtis, "there is a beach clean-up later during the day, which is part of a big campaign to keep our rivers, oceans, and beaches clean. See the posters in the parking lot that say 'Don't Be Trashy'. Not that you can read yet! See those clear plastic bags over there? They are for the beach clean-up."

P10

P11 "Trashy as in rubbish?" asked Kai, "but how are we going to help?"

P12 "Every time there is a beach clean-up, I like to play my part before it starts. I'm happy that I have a friend to share the load and fun with!" exclaimed Curtis.

P13 "But this doesn't sound like much fun to me? What's in it for us?" asked Kai.

P14 "If our environment is clean and there is no pollution, we all have safe, good quality water to swim in and drink," explained Curtis. "And everything is connected; if there is pollution in the rivers where you live, it will have a ripple effect on the ocean because the pollution moves with the flowing freshwater, all the way from high up in the mountains through streams, rivers, and estuaries, and eventually lands up in the ocean with me."

P15 "Wow", said Kai, "so if you pollute a river you will eventually be polluting the ocean?"

P16 "Yes, well done, you've got it," nodded Curtis.

P17 "Anyway, let's get started," shouted Curtis. "And this is what we'll do… you pick up all the big pieces of glass, paper, and plastic, and put it in piles over here. I will collect all the tiny items, like the bottle caps, bits of glass, and plastic, and put it in separate piles so that it can be recycled later."

P18 "And the winner will be the one who collects the most number of items," said Curtis, knowing that Kai was very competitive and loved a challenge.

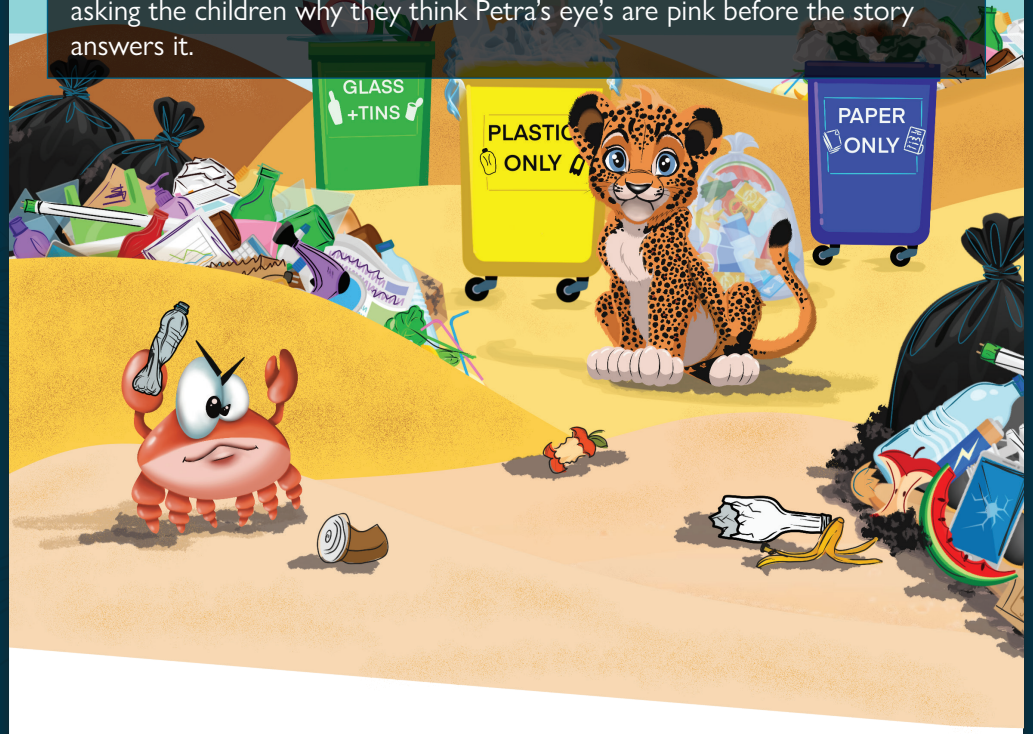
P19 Off raced Kai, tearing down the beach, collecting the bigger pieces of pollution in his jaws and dumping them in a pile.

P20 Meanwhile, Curtis raced crabwise, proud of his skills as one of the fastest crabs due to his flat body and long legs, grabbing the small items with his pincers and complaining as he went along at the amount of pollution on the beach. He knew that his friends living in the ocean could get entangled in this plastic, or even worse, they could eat it thinking it was food.



AGES 4 – 8
Add additional actions into the story with repetition.

AGES 9 – 13
Tone down the actions if needed and add on deeper questions such as asking the children why they think Petra's eye's are pink before the story answers it.



P21 "Does no one realise the damage these plastic bags do to the sea life," he muttered, "…and these sharp pieces of glass and cigarette butts that can harm the sea and land creatures, and pollute the water… how inconsiderate and dumb!"

P22 "I'm the winner! I'm the winner!" yelled Kai, as he pounced up to Curtis, stopping suddenly and showering him with sand.

P23 Two eyes emerged, as Curtis dug his way out of the sand and went to the piles of collected items on the beach.

P24 "Well done, Kai," congratulated Curtis, "you are indeed the winner! As first prize, you can rush up that sand-dune and roll down it as many times as you want. But you better be gone before all the people arrive. They won't know who has done all this good work of collecting and sorting all the pollution on the beach. I can't wait to see the expressions on their faces when they see this."

P25 Kai rushed off, eager for his reward and keen to get home to share his beach cleaning experience with his mom and siblings.

P26 Curtis, the crab, continued scouting for his breakfast, proudly repeating to himself, "I might be small, but I am very important! By burrowing and scavenging in this inter-tidal area, I contribute to its health and diversity."

THE CATCHMENT TO COAST CONCEPT OPTION 2

ACTIVITY

DEMONSTRATION
WATER POLLUTION DEMONSTRATION

DURATION

20 minutes

RESOURCES

Bucket of water & items to pollute the water

CURRICULUM LINK

Natural Science and Technology Grade 6 / Strand: Matter and Materials / Topic: Water pollution, Natural Science



1. **Ask** learners how they think water becomes polluted. Start with in the home. If they think of their homes and all the things they flush down the drain or the sink, like dirt after having a bath or the dirt off a plate of food when washed. This water finds its way down the pipes to underground sewer pipes and then to a wastewater treatment plant. Here the water is treated and is eventually released back into the environment. Other things that pollute water include soap, car shampoo, grass, leaves, pesticides, oil poured into water. What else can the group think of?
2. **To demonstrate** and make the activity fun, you can optionally have a bucket of water and give each learner a chance to add something to the water, such as oil, sand, leaves, toothpaste, dishwashing liquid. Point out to the learners that some things dissolve in the water – these are soluble, and that some things don't dissolve, these are insoluble. Mix up the water and demonstrate how some things like "printing oil" mix with the water, while others like leaves, stay solid and dont dissolve into water. Explain the concept dissolve means that it becomes part of the liquid.
3. **Explain** that in nature water flows from the top of the mountains down streams into rivers and eventually makes its way into the ocean. This is known as catchment to coast – and it also means that whatever pollution like litter or pollution from factories etc. enters the water inland, will eventually end up in the ocean.
4. **Ask** them what would happen to people if we drank this polluted water. Answer: we could get sick.
5. **Explain** to learners that South Africa is a very dry country, and that water is actually quite scarce. We need to protect our water sources as well as save water where we can.



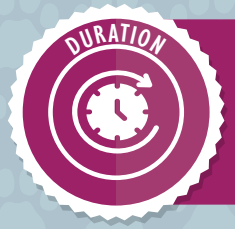
Ages 4 – 8
Use simpler language such as dissolves and does not dissolve/ or mix to become part of the water.

Ages 9 – 13
Use more complex language such as soluble and non-soluble.

TUNING IN TO THE CONCEPT OF WATER SCARCITY



INTRODUCING WATER SCARCITY IN SOUTH AFRICA



15 minutes



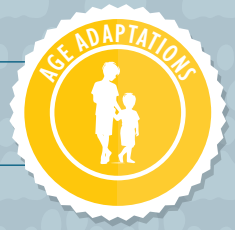
None



Links to curriculum in action projects below.

1. **Ask** them to name one or two ways in which they can protect the water in South Africa – help them along with some ideas if needed (e.g. don't litter, support conservation areas etc.)
2. **Ask** them to name one or two ways in which they can save water – help them with some ideas and explain if needed (e.g. water plants early morning or late afternoon when the sun is less intense, flush less, use a shower timer)
3. **Link** the above to the action project selected.

Older children could be asked to write down the water saving ideas and younger children to draw them if you have more time.



2. Action Projects

Ensure to consult your newsletter for point allocations for each activity. Any number of activities below may be completed and is entirely optional. The more projects that are completed, the more points your group will earn.



ACTIVITY

ACTION PROJECT OPTION 1
MINI-SASS ACTIVITY

DURATION

30 minutes to 1 hour

RESOURCES

You will need a flat container to scoop river/stream water into, a magnifying glass to identify insects, a net and a Mini-SASS chart to calculate the results (all of these items are provided for in the support toolbox). You will require a whiteboard marker or two to write down results onto the Mini-SASS forms.

POINTS

Your group will earn 200 points for completing the Mini-SASS activity (water quality test)

EVIDENCE

Submit a picture of the group with their completed Mini-SASS forms

CURRICULUM LINK

Subject: Natural Sciences and Technology Grade 6, Strand: Mixtures and water resources: Concept water pollution.

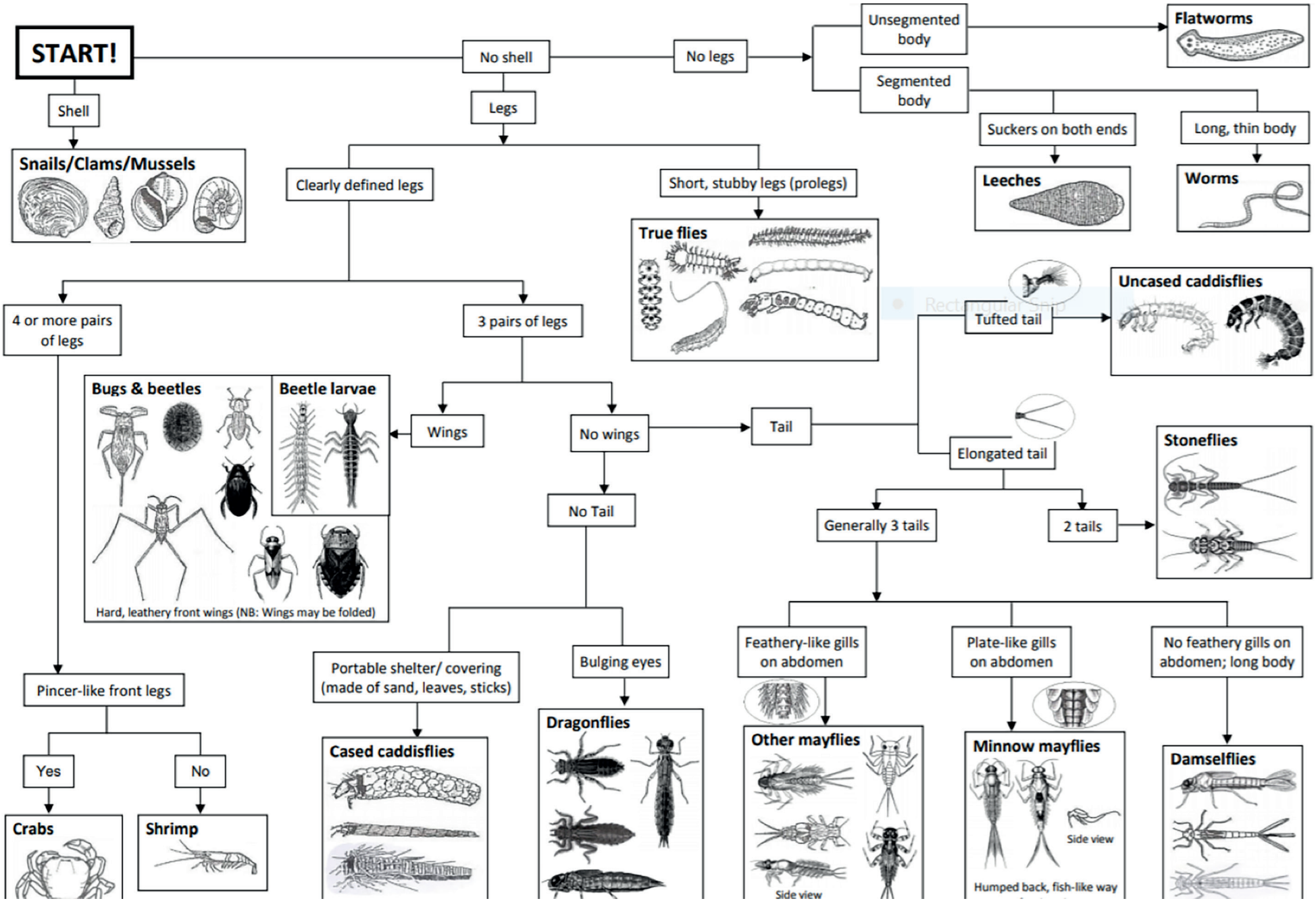
Find an area where there is natural flowing water or a dam, to do the test. Explain to the group that water quality affects the type of animals and plants that can live in it. Some insects can tolerate water that is in a bad condition, while others cannot. Explain that the Mini-SASS test, checks the quality of water by looking at what type of insects can be found. The learners should scoop up a sample of water into the flat, broad tub. They should then use the magnifying glass to identify the organisms they see. The Mini-SASS chart has a grid that assists with identification using the lack or presence of certain body parts etc. Learners must tick off the organisms they find. Each organism has a certain number of points, depending on how sensitive they are to water. Once the points are added up on the sheet, the group can assess in what condition the water is. Visit ***https://minisass.org***

See Mini-SASS "Method" for detailed information. Once the group has completed the Mini-SASS, ask them what can be done to try and ensure our water sources are polluted less. Let each learner come up with at least one pollution solution (e.g. litter less, don't throw oil down drains).

Ask younger children to do the fun things such as disturb the water and look for insects. Older children or adults can check the insect is identified correctly, help filling the container with water and complete the calculations.

AGE ADAPTATIONS

DICHOTOMOUS KEY



SITE INFORMATION TABLE			
River name:			Date (dd/mm/yr):
Site name:			Collector's name:
GPS co-ord Lat(S):	Long(E):		School/organisation:
Site description:			Notes:

pH:	Water temp:	°C:	Dissolved oxygen:	mg/l:	Water clarity:

GPS co-ordinates as degrees, minutes, seconds (e.g. 29"30'25* S / 30°45'10* E) OR as decimal degrees (eg. 29.50694° / 30.75277°E) If you don't have a GPS, upload your results at **www.minisass.org**, find your site on the map, click to upload your result and the co-ordinates are saved for you!

Scoring

1. On the table, circle the sensitivity scores of the identified organisms.
2. Add up all of the sensitivity scores.
3. Divide the total of the sensitivity scores by the number of groups identified.
4. The result is the average score, which can be interpreted into an ecological category given below.

Interpret the miniSASS score:

Although an ideal sample site has rocky, sandy, and vegetation habitats, not all habitats are always present at a site. If your river had no rocky habitats that were sampled, use the sandy type category to interpret your scores.

Ecological category (Condition)		River Category	
		Sandy Type	Rocky Type
	**NATURAL CONDITION** *(Unchanged/untouched - Blue)*		
	**GOOD CONDITION** *(Few modifications - Green)*		
	**FAIR CONDITION** *(Some modifications - Orange)*		
	**POOR CONDITION** *(Lots of modifications - Red)*		
	**VERY POOR CONDITION** *(Critically modified - Purple)*		

Groups	Sensitivity Score
Flat worms	3
Worms	2
Leeches	2
Crabs or shrimps	6
Stoneflies	17
Minnow mayflies	5
Other mayflies	11
Damselflies	4
Dragonflies	6
Bugs or beetles	5
Caddisflies *(cased & uncased)*	
True flies	2
Snails	4
TOTAL SCORE	
NUMBER OF GROUPS	
AVERAGE SCORE *(miniSASS Score)*	
Average Score = Total Score ÷ Number of groups	



Now, upload your results at
www.miniSASS.org

www.minisass.org

Mini-SASS is used to monitor the health of a river and measure the general quality of the water in that river. It uses the make-up of macro-invertebrates (small animals) living in rivers and is based on the sensitivity of the various animals to water quality.

NOTE: *miniSASS does NOT measure the contamination of the water by bacteria and viruses and thus does not tell us if the river water is fit to drink.*

RESOURCES

Net (see ***www.minisass.org***)
White container / tray / ice-cream box
Magnifying glass
Pencil
Shoes / gumboots
Hand wash / soap

DON'T HAVE A NET? MAKE YOUR OWN - IT IS EASY!

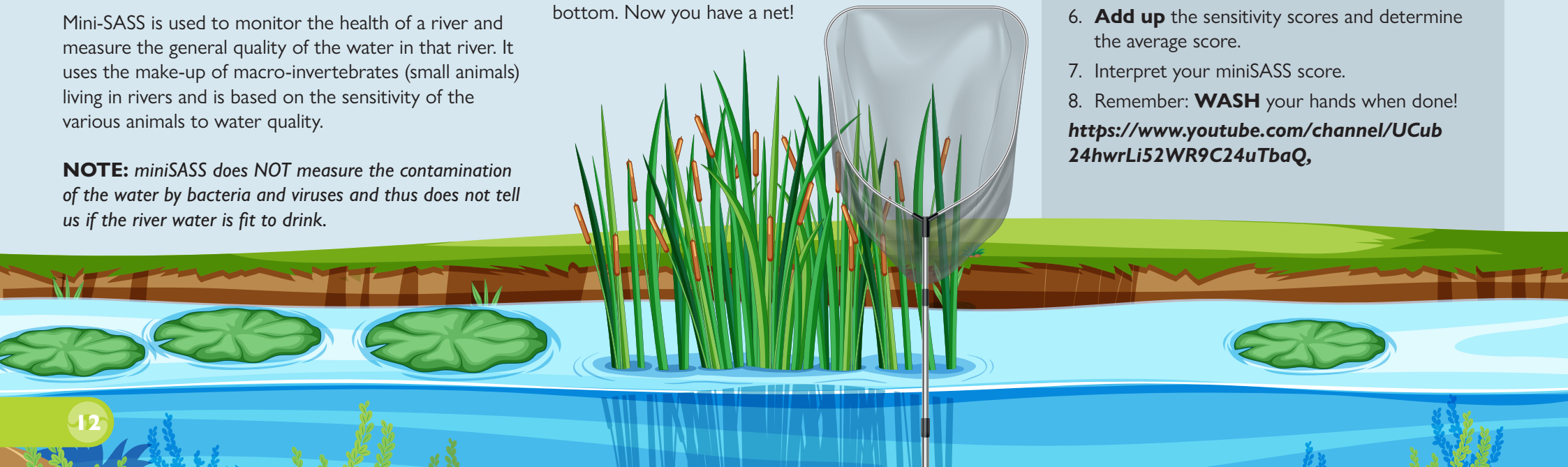
Take any piece of wire, for example an old clothes hanger, and bend it into the shape of a net. Then tie the netting (which can be any porous material) to the wire with a piece of string. Alternatively cut the bottom out of an ice cream container and staple netting to the bottom. Now you have a net!

Method

The best sites have rocks in moving water (**rocky type** rivers). Not all sites have rocks, but may be largely sandy (sandy type rivers).

1. Whilst holding a small net in the current, **disturb** the stones, vegetation, sand etc. with your feet or hands.
2. You can also lift stones out of the current and gently **pick** organisms off with your fingers or forceps.
3. Do this for about **5 minutes** whilst **ranging across the river to different habitats** (biotopes).
4. Rinse the net and turn the contents into a plastic tray. **Identify** each group of organisms using the identification guide (see insert: start with the dichotomous key, then use the identification guide for more information).
5. Fill in the site information and **mark** the identified organisms off on the scoring sheet (back page).
6. **Add up** the sensitivity scores and determine the average score.
7. Interpret your miniSASS score.
8. Remember: **WASH** your hands when done!

https://www.youtube.com/channel/UCub24hwrLi52WR9C24uTbaQ,



ACTIVITY

ACTION PROJECT OPTION 2
PLANT A WATERWISE GARDEN OR MAKE AN EXISTING GARDEN MORE WATERWISE

DURATION

1 to 4 hours (prep and planting - depending on complexity of project selected and number of plants planted) / 30 minutes additional for curriculum aligned activity

RESOURCES

You will need equipment to plant such as spades, and forks, depending on the soil. Additional soil may be needed, a well as your seeds or seedlings that you will be planting.

POINTS

Your group will earn 200 points for making a new waterwise garden from scratch and 100 points for making an existing garden more waterwise.

EVIDENCE

Submit a before and after pic of your garden.

CURRICULUM LINK

Subject: Natural Sciences and Technology Grade 4, Strand Life and Living Structures, Topic: What plants need to grow. An optional link Subject: Natural Sciences and Technology Grade 4, Strand: Life and Living Structures, Topic: Structure of Plants.

Plants that are not indigenous to an area, may require large amounts of water. It is therefore best to substitute water guzzlers with indigenous (plants from the Western Cape) plants that do not need lots of water. You will need to consult a nursery about waterwise plant species, but some examples may include the spekboom and many other succulents, certain daisy species and pincushions. The best, however, is to get advice from a suitable nursery with experience in indigenous and waterwise plants. They should also advise you on how to maintain these plants and if any special growing preparation, such as a specific soil type, is required. After planting, ask the learners what they think plants need to grow? Ask them if you have provided all of the items needed and link it to any after care that the plant may need. Plants need light, water, air, safety, minerals from the soil, and a place to live. New plants from seed, need water and warmth to germinate.

Once the learners have planted the garden, if you want to link the activity to the curriculum, have them choose one plant to draw and then interview the plant. Once drawn, let them label the following parts of the plant – stem, leaves, roots, flowers (if any). Young children can give you verbal answers if unable to write. They should then ask the plant the following questions and write the answers next to the plant part.

How old are you? Are you a seedling, a small plant or an adult plant with flowers or seeds?

- What does your stem look and feel like ?Green or brown , bendable or stiff, fleshy, hard, soft, thorny etc.
- What do your flowers look and feel like? Pink, green, hard, soft, small, large, bunched together, single
- What do your leaves look and feel like? Green, brown, long, short, lots of leaves on each stem, just one leaf on each stem, flat, round, fleshy, dry
- What do you need to survive? Sun, water, nutrients

Once the learners have completed their interviews, check to see that the answers are correct and assist if not. You can also have the entire group draw and interview the same plant, then work through the answers as a group afterwards and learners can "self-mark".

ACTION PROJECT OPTION 3
COMPLETE A GROUP WATER SAVING PROJECT

DURATION

30 minutes – 1 hour to implement the project / 30 minutes (to complete optional water audit sheet)

RESOURCES

Resources may be required, depending on the project selected.

POINTS

Your group will earn 100 points for completing a simple water saving project and 200 points for a complex water saving project.

EVIDENCE

Submit a picture of the water saving project and a calculation estimated on the amount of water saved since implementation.

CURRICULUM LINK

Subject: Natural Science and Technology Grade 4, Strand: Matter and Materials, Materials around us – the water cycle.

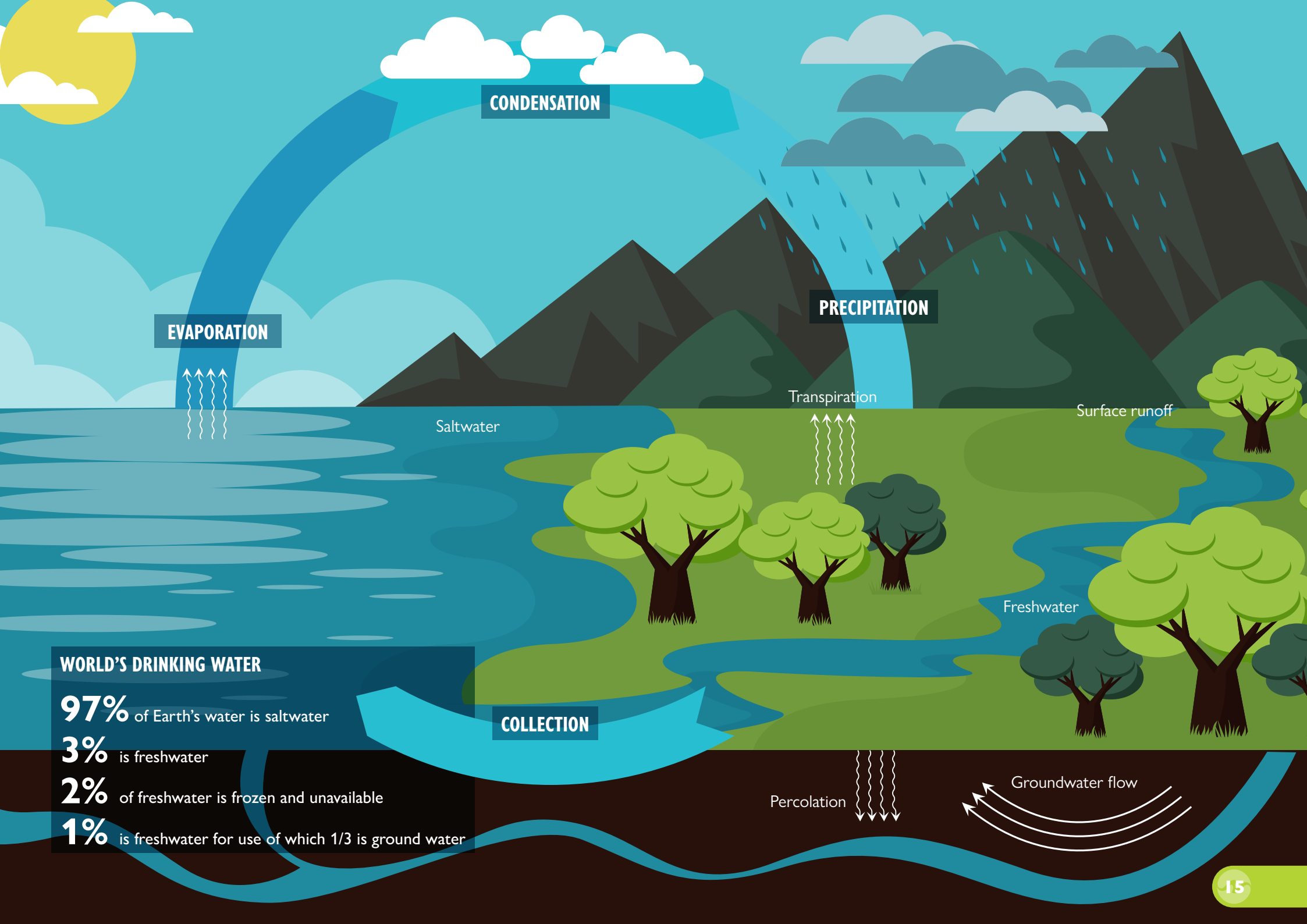
Explain the water cycle to the learners. Explain that there is only so much water on Earth and that it is recycled all the time. Most of the water is not drinkable because it is in the oceans or frozen. As the human population grows and our water needs become more, there is fear that there will not be enough freshwater for us. On top of this, South Africa is actually a water scare country and if we pollute our water sources, water is even more under threat. So, for all of these reasons, it is extremely important to save water.

Explain that today's project is all about saving water. Select a project where the group can be responsible for saving water collectively and implement. Some examples may include:

- Hippo bags are added to everyone's home toilets or toilets at school so that each flush uses less water (note that a 2-litre bottle can also be used to displace water in a toilet cistern). As an additional option, let the learners calculate the amount of water that is saved each day (number of litres saved per flush x average number of flushes per day x number of participants)
- Fundraising for and adding a jo jo tank to a community building or school
- Having children take up shifts at the end of the school day to check that there are no dripping taps at the end of the school day
- Every child starts using a cup of water to brush teeth
- Ask younger children to do the fun things such as disturb the water and look for insects. Older children or adults can check the insect is identified correctly, help filling the container with water and complete the calculations.

AGE ADAPTATIONS

For older children use the terms that they need to know for the water cycle such as precipitation and evaporation. For younger children simply explain the action e.g. water gets hot and becomes water vapor in the air, then forms a cloud, which then falls to earth as rain. Explain the percentages and ratios of different sources of water, for younger children simply state that we only have a very small amount of water that we can use or visually show the proportions using a circle or item.



WORLD'S DRINKING WATER

97% of Earth's water is saltwater

3% is freshwater

2% of freshwater is frozen and unavailable

1% is freshwater for use of which 1/3 is ground water

ACTIVITY

ACTION PROJECT OPTION 4
ADD WATER SAVING LABELS TO A COMMUNUAL BATHROOM OR KITCHEN OR OTHER AREA

DURATION

10 to 30 minutes

RESOURCES

You will need sticker paper, koki pens or a computer to design and a printer. Scissors to cut out the labels.

POINTS

You will earn 25 points per label that is placed in relevant areas

EVIDENCE

Submit a picture of the labels and placements

CIRRICULUM LINK

Subject: Natural Science and Technology Grade 4, Strand: Matter and Materials, Materials around us – the water cycle.

Using the water cycle information given in OPTION 3, explain to learners why saving water is important and that we need to remind ourselves and others to save water.

Decide on where you would want your water saving labels to go and what you want to say on them. Gather the right materials and let learners make and place the labels. Involve the learners in the planning of where and why. Always obtain permission for where your labels will be put up. Some examples include:

- Above select basins at a school or community building – "Please close the tap – save water"
- Above the tap for the hosepipe at a school – "Remember to water early mornings or late afternoon to save water"
- On the outside of hostel or communal shower – "Keep your showers short – save water"



3. Consolidation

Wrap up after your action project by reminding learners why the project they have completed is important to ensure all our rivers and oceans stay healthy. Ask each participant to name one way that they will make sure that they stay water warriors at home. They must each say or write down one thing they will do differently at home after the day, to save water. Ask some of the learners to share their water warrior plans. Younger children do not need to write down the promise.



ACTIVITY

WATER WATCHERS CONSOLIDATION

DURATION

15 minutes

RESOURCES

Pen and paper (older children) / crayons & coloring pencils (younger children)

AGE ADAPTATIONS

Younger children can drawn how they would like to save water



Notes





CapeNature

www.capenature.co.za

email: learning@capenature.co.za