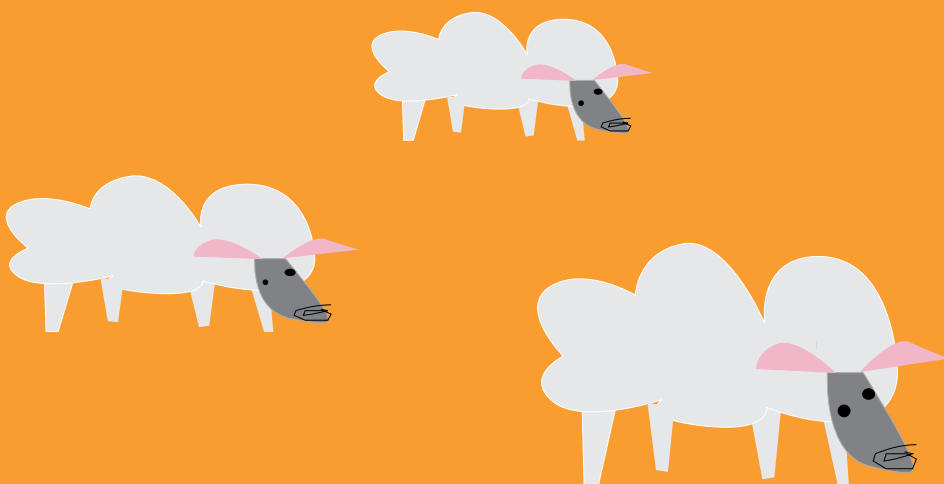
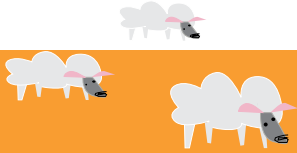




SECTION SIX: Making change

This section provides students with an opportunity to use their new knowledge and understanding to make informed decisions about how they use water. Students identify the priorities for change and organise action for the environment to reduce their use of tap water.





Section 6: Making change

The purpose of this section is to help students to:

- Understand how they can conserve treated water
- Recognise how their actions contribute to a sustainable future


Overarching concepts for Section Six:

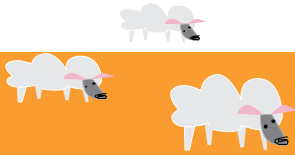
- Everyone can use water more efficiently and help protect our natural environment
- We need to make informed choices about how we use our tap water



Section 6: Making change

Learning experiences – Section Six

	Learning experiences	Learning intentions Students will . . .	Curriculum links (Achievement objectives)	Content
Before taking action	1. Which water action?	<ul style="list-style-type: none"> Target an issue about water use in their school Decide on an environmental action to reduce their water use and address the issue 	<p>Science: Level 3 and 4 Nature of Science: <i>Participating and contributing</i> Use their growing science knowledge when considering issues of concern to them</p> <p>Explore various aspects of an issue and make decisions about possible actions</p>	Students examine possible actions to reduce their water use. They make an informed decision about how they could use water more efficiently and decide on an appropriate action
	2. Planning for action	<ul style="list-style-type: none"> Organise, plan and implement an action project to reduce their water use 	<p>Health: Level 3 Healthy communities and Environments: <i>People and the environment</i> Plan and implement a programme to enhance an identified social or physical aspect of their classroom or school environment</p>	The action is planned. The students and teacher plan when, where and how the action will take place. Responsibilities are assigned and action is organised
Taking action	Take action for the environment		<p>Health: Level 3 Healthy communities and Environments: <i>People and the environment</i> Plan and implement a programme to enhance an identified social or physical aspect of their classroom or school environment</p>	
After taking action	3. How did it go?	<ul style="list-style-type: none"> Reflect on their action project and evaluate how it went 	<p>Technology: Level 3 and 4 Technological Practice: <i>Brief Development</i> Justify the nature of an intended outcome, explaining how it addresses the need or opportunity. Describe the key attributes that enable development and evaluation</p>	Students critically reflect on their action and describe how they will maintain their project. Students can reassess water use and monitor change, which may lead to further action



6:1 Which water action? – teacher notes

Curriculum links

Science: Level 3 and 4 Nature of Science:

Participating and contributing:

Use their growing science knowledge when considering issues of concern to them

Explore various aspects of an issue and make decisions about possible actions

Other curriculum links at Level 3 and 4: Technology;

Technological practice: Brief development, Planning for practice



Education for sustainability concepts

Interdependence/ Whanaungatanga:

Everything and everyone in our world is connected

Sustainability/Hauora: The choices we make today affect choices we will be able to make in the future

Background knowledge

What is taking action for the environment?

Taking action is making an informed decision to carry out a task that will contribute to a sustainable future. The information students have learned throughout this unit should allow them to make informed decisions about which water action is appropriate for them and will contribute to a sustainable water future. Examples of water actions are listed on BLM 6a.

Planning for action

When planning to take action you will need to consider what students will learn as a result of the action, how they can be involved and how manageable and achievable it is. Action should be a result of the learning and investigation during the water unit. An action should ideally target either an issue which came up during your investigations or a long standing water issue in your school. Following the processes in this section will help to successfully plan for action.

Why can't the teacher choose the action?

The aim of environmental action is that the students are motivated to take action for their own reasons. Their environmental action will mirror their experiences and will be right for them. Innovative thinking should be encouraged. Well managed, student centred actions can have a lasting, profound influence on students' lives.

What is action competence?

Action competence is the ability of students to take action on issues that concern them. It is learning about environmental issues so that students can plan and take action on those issues. <http://efs.tki.org.nz/EfS-in-the-curriculum/Taking-action/Action-competence>

Why is taking action important?

Taking action is an essential part of environmental education. The action component is crucial, and will often lead towards the resolution of an issue or problem. You may choose to carry your action over to the next term or to enlist help from the community or another class in order to make it happen.

What are guiding questions?

Guiding questions keep your action relevant to your learning and goals. They define the requirements for action and ensure that your action is going to target the issues you have investigated during your unit.



6:1 Which water action? – learning experience

Learning experience

(This activity may take several sessions to complete)

- Share the learning intentions and success criteria
- Revisit the desired water future from Section Five, Learning Experience Five. Discuss how school water use could affect the future environment
- Encourage students to set a water saving goal as a starting point. Have water bills and audit information available. Agree on a realistic, obtainable goal which addresses a water issue. Your goal may be to achieve a 10% reduction in water use in a year or it may be to increase the amount of water recycling or rainwater harvesting in your school
- Discuss any issues about school water use (from your audit or other investigations) and the underlying problems behind these. Which issue is the most concerning? What is the cause of this issue?
- Ask students to brainstorm ideas about water actions which would help achieve the goal for their school and solve the issue
- Show any relevant presentations and information listed on BLM 6a to students. After viewing examples, discuss possible actions to address your school issue
- Decide on your top three potential actions. Record them on BLM 6b. Use your goal to establish some other guiding questions (see *teacher notes*). Complete the decision making grid together as a class (the decision making grid will help make choosing an action more straightforward)
- When you have decided on an action, complete BLM 6c either in groups or as a class. The questions on BLM 6c will encourage students to make sure that the action chosen is appropriate for the issue involved and the goal they have established. The action should be guided by the teacher so that it is manageable and achievable

Reflection questions

- How will this action help you reach your goal?
Answers will vary
- Can you achieve this action with the time and resources you have available?
- How does this action contribute to a sustainable future?

Vocabulary

- goal
- issue
- significantly

Learning intentions

Students will:

Target an issue about water use in their school

Decide on an environmental action to reduce their water use and address the issue

Success criteria

Students can:

Identify an issue about water use in the school to target

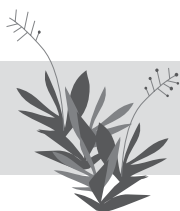
Identify an environmental action that will reduce their water use and address the issue

Resources

BLM 6a Examples of water actions

BLM 6b Decision making grid (enlarge to A3)

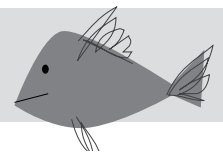
BLM 6c Our chosen action



BLM 6a: Examples of water actions

		Issue	Potential solution	Description of solution	Examples
			LC = low cost MC = medium cost HC = high cost		<i>Unless other website stated these can be found at http://kdc.nsw.edu.au/showcase.html#built</i>
Water conservation	Changes to water use	A lack of awareness about the need to conserve water at school and in the community	Education campaign at school about water conservation LC	An awareness campaign motivating students and the community to use drinking water wisely; assembly presentations/posters/concerts/newsletter items etc...	2008 KDC Sydney water challenge
			Make a movie to tell people how they can conserve water LC	Students could design and make a movie about water conservation at their school	Erskineville_Wollemi_Year3.pdf
		Students consistently forget to conserve water at certain locations at the school	Mural about water conservation LC	Students design a mural about water conservation for areas where water is being wasted	Erskineville Year 3 Boronia
			Signs to remind students to conserve water MC	Students design and produce signs to remind students to conserve water at key locations	Narellan Vale 4H
	Water is not being used wisely in homes	Produce a brochure/movie/show/song about water conservation at home LC	Research and design a targeted brochure to show examples of water conservation devices and actions for homes	http://www.sustainability.govt.nz/goal/reduce-water-usage http://www.sawater.com.au/sawater/captainplop/cp_flash_spread/index.html	
Emergency water	No water stored at home or at school in case of an emergency	Set up emergency supplies of water for school/home LC	Research and plan an emergency supply of water for school/home. Encourage others to do the same by sharing your experiences	http://www.wellington.govt.nz/services/watersupply/emergency/emergency.html	

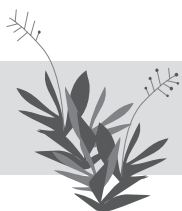




		Issue	Potential solution	Description of solution	Examples
Water wastage	Inefficient water use	Hoses or inefficient sprinklers are used to water the garden and use a large proportion of our water	Replace old watering system with a more water efficient watering system HC	Investigate the alternatives for your garden irrigation and obtain funding to replace it	http://www.gw.govt.nz/assets/Be-the-Difference/Water-conservation/WGNDocs-767001-v1-HowtoChoosetherightirrigationequipmentforyourgardenleaflet-Webversion.pdf
		Drinking-quality water is being used to water the garden/flush toilets	Install a rainwater tank or greywater recycling system HC	Design a system to collect rainwater in a water tank to flush toilets or use greywater recycling to flush toilets/water the garden	http://www.theoutlookforsomeday.net/films/2010/054/ Malabar 3N http://www.watersmart.co.nz/garden-irrigation-wellington
		Taps are inefficient and waste water	Investigate and install water saving devices for taps MC	Install tap aerators/flow restrictors for taps to reduce flow	Narellan Vale 3-4 S
		Toilets are inefficient (no dual flush)	Install dual flush, water efficient toilets HC	Students investigate alternatives to their current toilets and urinals	
			Install water saving device in toilet LC	Place 2L plastic bottle in each cistern to save water with each flush if dual flush too expensive	http://www.youtube.com/watch?v=hWbVuVcATqk&feature=related
		Urinals are wasting water – old inefficient system	Install automated or waterless urinals HC	Students investigate alternatives to their urinals	http://www.waterless.co.nz/testimonials.htm
	Water from drinking fountains is wasted	Install more water efficient drinking fountains/modify drinking fountains HC - LC	Students research and make changes to their water fountains to make them more water efficient	Heathcote PS	
Recycle water from fountain which would otherwise be wasted MC		Students design a system for recycling wastewater from drinking fountains onto gardens	Bradbury PS		
	Leaks	Leaks from taps or pipes	Investigate and describe steps to fix a leak LC	Research how to fix any leaks from taps or pipes in your school and then design a method to fix them	http://www.pcc.govt.nz/A-Z-Services/Water-Use-and-Wastage

Don't be limited by these ideas – be creative with your action



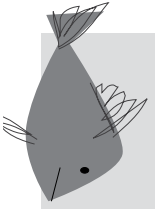


BLM 6b: Decision making grid

Possible action			
Guiding questions			
Would this action reduce our water use significantly?			
Do we have the resources we need or can we get them easily?			
Will we learn about something new as a result of this action?			
Will the action involve our community?			
Total score (Scoring out of 3: 3 = definitely 2 = maybe 1 = probably not)			

Example of a decision making grid

Possible action	Rainwater tank	Install aerated taps in our classrooms	Produce a movie about water conservation
Guiding questions			
Would this action reduce our water use significantly?	3	3	2
Can we achieve this action within the time we have?	1	3	1
Do we have the resources we need or can we get them easily?	1	1	1
Would we be excited about doing this action?	2	1	3
Will we learn about something new as a result of this action?	3	2	2
Will the action involve our community?	3	1	3
Will this action contribute to our school goal?	3	3	3
Total score	16	14	15



BLM 6c: Our chosen action

Our school's water goal is...



How will this action help us reach our goal?

This action will help save water by:

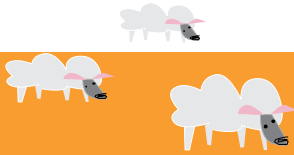
Our water action will be:

We chose this action because...

How much water will we save?

What issue does this action help to solve?





6:2 Planning for action – teacher notes

Curriculum links

Health: Level 3 Healthy communities and Environments:

People and the environment:

Plan and implement a programme to enhance an identified social or physical aspect of their classroom or school environment

Other curriculum links:
Level 3 and 4: Technology;
Technological practice: Brief development, Planning for practice

Background knowledge

How can the teacher help to enable students to complete the action?

Thinking ahead of students and removing potential obstacles will help the action to progress. This may include discussing the action project in advance with the principal, BOT or local businesses.

Environmental action ideally involves people outside your school. There will be many people who will be able to help you – in councils, among parents and families, in not-for-profit groups, businesses and other agencies.

Generally people are keen to help schools and are generous with their time. Initiatives which bring communities together are valuable in many ways and will enrich your school.

Should we complete more than one action?

This will depend on how much experience you and the students have with environmental action. The fewer projects you have, the higher the chance of success and the more likely the project is to create lasting change.

How do I find time to carry out this action?

You may find that you need to carry the action over into the following term or ask for some extra resources in order to achieve your action. Support from other staff and the principal is vital to the success and longevity of an action project.

Obtaining funding for action projects

Funding for water action projects is available from several different sources. You may also be able to fundraise or negotiate with local businesses to achieve your goals.

Examples of funding available are:

Where there's water community environmental grant

<http://www.waternz.org.nz/wherethereswater.html>

(In May each year)

WWF Environmental education fund

http://www.wwf.org.nz/what_we_do/education/funding_for_schools/

(April and September each year)

Other funding

There are other funding opportunities available from councils, businesses and the Ministry for the Environment.

For other funding opportunities see: <http://www.fis.org.nz/> (NZ funding information service (FIS) website)

Education for sustainability concepts

Interdependence/

Whanaungatanga:

Everything and everyone in our world is connected

Sustainability/Hauora:

The choices we make today affect choices we will be able to make in the future

Responsibility for

Action/Kaitiakitanga:

If we want to use taonga, we must look after the taonga. Taking action, informed decision-making, citizenship, consumerism, enterprise, resilience and regeneration



6:2 Planning for action – learning experience

Learning experience

(This activity can be completed as a class or in groups)

- Share the learning intention and success criteria
- Discuss the action chosen in the previous activity. Ensure that the action is both achievable and realistic
- Consider the resources required to complete the action. Brainstorm ideas and record
- Ask students if they have ideas about who could assist with the project. They may have relatives or contacts who could lend a hand. Also consider businesses, councils and other outside agencies
- Name people who will need to be consulted before starting the action and discuss this process
- Complete BLM 6d individually or together as a class
- After completion, prioritise steps and assign responsibilities. Record these and agree on an appropriate timeframe
- Agree on a collective plan of action
- Constructing a timeline or a list of steps may help to keep you on track and organised
- **Begin your action!**

Reflection questions

- What are the potential consequences of your action?
Answers will vary

Vocabulary

- resources
- completed
- responsible/responsibilities
- consequences

Learning intentions

Students will:

Organise, plan and implement an action project to reduce their water use

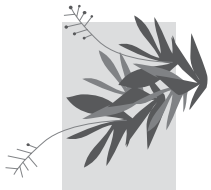
Success criteria

Students can:

Complete an action plan for their project and implement the plan

Resources

BLM 6d School water action plan



BLM 6d: School water action plan

When will it be completed?

What is the cost? Where will the money come from?

Where will this action happen?

What resources and information do we need?

Who will we need to talk to about this action?

How will we let people know about our action?

Action

What needs to be done?

- 1.
- 2.
- 3.
- 4.
- 5.

Who is responsible?

- 1.
- 2.
- 3.
- 4.
- 5.





6:3 How did it go? – teacher notes

Background knowledge

Why reflect and evaluate?

Reflective thought and critical evaluation allows students to think objectively and to stand back from their project and look at it from a different perspective. Reflection allows knowledge to be assimilated and adapted and encourages deep, critical thinking.

How will reflecting and evaluating help our action?

Reflecting will enable students to take more responsibility for the action and to think about improvements which could be made. Reflecting on action will increase their understanding of the action process and increase the likelihood of successful future environmental action. Reflecting on learning will also have implications on your teaching.

Planning for reflection

Ask questions during your action taking which prompt reflective thought. Questions which encourage students to examine their thoughts and feelings will allow more effective reflection and evaluation.

Share your experiences with the school and community

Inform others in your school of what your environmental action was and why you did it. Present a play at assembly, write a blog or web page or an article for the newsletter.

This may inspire other classes to be involved or participate in their own action for the environment.

Allowing time for celebration

Ensure that you celebrate your action with your students and applaud their successes. If others have been involved in your action, acknowledge their efforts as well.

Keep positive

Keep positive about the project and its successes. Students often really enjoy participating in action for the environment. Keep up momentum by frequently revisiting your action and maintaining it. If there have been mistakes, learn from them and look forward to your next project.

Curriculum links

Technology: Level 3 and 4 Technological practice:

Brief development

Justify the nature of an intended outcome, explaining how it addresses the need or opportunity. Describe the key attributes that enable development and evaluation of an outcome

Education for sustainability concepts

Sustainability/Hauora:

The choices we make today affect choices we will be able to make in the future

Responsibility for

Action/Kaitiakitanga:

If we want to use taonga, we must look after the taonga. Taking action, informed decision-making, citizenship, consumerism, enterprise, resilience and regeneration

6:3 How did it go? – learning experience

Learning intentions

Students will:

Reflect on their action project and evaluate how it went

Success criteria

Students can:

Complete an evaluation of their action project

Resources

BLM 6d School water action plan (*completed*)

Learning experience

- Share the learning intention and success criteria
- Explain to students what evaluation means and why it is important (*see teacher notes*)
- Discuss how the process of taking action went. Ask students what difference the action has made
- Was the action plan carried out as described on BLM 6d? What changes were needed?
- Complete a bus stop activity or PMI chart using the following questions:
 1. Did you achieve what you set out to achieve?
 2. Did you enjoy the action project? *Explain*
 3. Did it solve the problem/ issue? *Why/Why not?*
 4. What did you learn from this action? What else would you like to learn?
 5. Is the community involved? How could we encourage them to be involved?
 6. Does your action require any maintenance? If so, what sort of maintenance is needed? Who is responsible and when will it be done?
 7. If you did this action project again, what would you do differently? *Why?*
 8. Will this action have an effect on the future environment?
 9. How did you personally contribute to this action?
 10. What would you like to see happen next?
- After completion, discuss the responses. Plan any maintenance needed
- Ask students if they have any ideas about what the next steps are for the project. Refine ideas and share them with other interested people
- *As an extension, re-survey your water use or water meter readings and compare to previous results. Has there been an improvement? Inform the school about the difference you have made.*

Vocabulary

- achieve
- evaluation
- maintenance