Environmental Education Programme

Brought to You By
The Napier City Council Waste Minimisation Team

Waste Aware half-day programme and post-visit activities

Produced by Dr Amelia McQueen

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How to use the post-visit activities…

Schools participating in the Waste Aware half-day programme are expected to complete post-visit activities after the session at the Marineland Environmental Education Centre. 'Did you know' facts, suggested post-visit activities, 'Where from Here' contacts and the 'reporting to co-ordinator' template will assist with completing the Waste Aware school pledge.

Select any of the post-visit activities and templates provided below and if need be develop them further to suit the level of learning of the class or use them to help focus student driven inquiry. Post-visit activities or ideas can also be used as a 'spring board' for own ideas for activities.

The 'Did you know' facts and suggested post-visit activities by no means cover all topics on solid waste; rather they give a selection of ideas that can be used while teaching the Waste Aware topic. The 'Where from here' contacts, Web sites and other resources that provide extra ideas are noted at the end of this resource.

Post – programme activities:
Reflect and review attitudes and values after the programme. Empower students by letting them generate their own action activities for the school environment. Focus on what they can do now and how they can better manage waste.

- *Re-evaluate what the children know about the waste topic. Ask the children to write down 3 facts, 2 interesting things they know about and 1 question that they have about the waste topic. See above for the 321 template sheet.*

- *How much rubbish do you create? Ask the children to do a personal audit. Instead of putting the rubbish in the bin the children have a special 'rubbish for the day' bag where all their rubbish they created goes in (including lunch rubbish!). At the end of the day the children weigh their rubbish bags. The children could invite their parents to take part in this activity too and have a family 'rubbish creation' comparison! (You may need light-weight scales to weigh objects such as drink bottles and plastic containers). See the template sheet for a personal audit below or ask the children to make their own.*

- *Ask the children to do a household audit – how many pieces of rubbish are created in one morning at home? Use the class data for a math lesson for example, create pie charts or bar graphs of types of rubbish created. Work out how much rubbish the average household creates. Make authentic statements about the composition of their household rubbish. Is there an issue? What could be done about it? See the template sheet for a household audit below.*

- *Have the children ask their parents how much they spend a week in waste removal (e.g. how much does a plastic rubbish bag, wheelie-bin and or transfer station disposal cost, how often is it used per week). Use the data for a math lesson. Set a challenge for the parents to see if they can reduce what they spend on waste removal. Evaluate how successful each household was, what steps were taken to reduce waste and therefore their waste removal costs?*

- *What about school rubbish? Ask the children to do a school audit, carry out an investigation of some of the school rubbish bins (Caution: check health and safety issues for this activity. Ask the Waste Aware co-ordinator for assistance with this activity). Sort the rubbish into groups (e.g. plastic, paper, cardboard and tin), weigh the groups of rubbish and create bar charts or pie charts from the data. Estimate how much rubbish the school produces in a year. Display the investigation on a poster…How much of the school rubbish could be recycled? Present the results at a*

school assembly or even at the science fair. See data collection template to get you started.

- *Re-evaluate the 'solid waste' questionnaire (see pre-visit activities)…Ask the children to test the 'solid waste' questionnaire on a target groups within the school. Compare pre and post programme answers to the questionnaire. Was there a change in knowledge and attitude?*

- *Re-evaluate to 'what would you put in a landfill?' sheet (see pre-visit activities). Was there are difference in answers before and after the programme?*

- *Technology idea - Ask the children to design their own landfill. What features do the landfills have? Have a classroom assessment of the designs. Which is the most practical? Which is the most ecologically friendly? Which is the most innovative?*

- *Ask the children to investigate the problem with leachate. What is it and how does it affect the local environment? Hint: check out the suggested websites below.*

- *Discuss 'REDUCE', for example, can we do without plastic bags? Give it a go, for a day at school and at home. Find out what the children's impression were. Was it easy or hard to do away with plastic bags? Are there other items in our daily lives that we can reduce our use of?*

- *Ask the children to design and make a school non-plastic 'shopping bag' for the parents to take to the supermarket.*

- *Ask the children to research about heavy metals / pollution and how it affects marine animals - e.g. deposits of heavy metals in seal blubber. Extend on this concept and make the link between the Omarunui landfill and the marine environment. For example could leachates from the local landfill affect our marine life in Hawke Bay.*

- *Ask the children to extend their knowledge of foodwebs, create a foodweb that includes dolphins, seals and little blue penguins. Discuss the consequences of solid waste on this foodweb. For example, if many dolphins or seals are killed by plastic bags what happens to the food web.*

- *REUSE Technology idea - Have the students design something useful using a range of recycled materials (e.g. plastic, polystyrene and tin). Have a class assessment of the designs... Which design did the children like best? What was the most eye-catching design? Ask the students to critically assess their own designs - What do they like about their designs? What would they change if they did it all again? Hint: Check out the student architecture designs at Victoria University, see web-site link and the newspaper clipping below.*

- *Where does our recycling really go? Ask the students to investigate what happens to an item of recycled rubbish. Key questions: Is it recycled in New Zealand? What is the end-product of recycling e.g. plastic bottles turn into polar fleece? And do we use the recycled product in New Zealand? Ask the children to evaluate their findings and suggest other options for recycling if considered necessary. See plastic and glass recycling templates below.*

- *The Plastic Debate. Much of the New Zealand plastic is shipped to China for recycling (See websites and news articles) Set up a classroom debate – "Should we really be recycling plastic at all considering it goes half way round the world to China?". Fill in the 'where does that recycled rubbish go?' on the world map – see below*

- *Using lunch-time food scraps, make a school compost, worm farm or Bokashi system (see websites for details on how to do this and talk to Waste Aware programme co-ordinator for support and ideas). What do we use compost for???… The end-product of compost and worm farms is ideal for veggie gardens… set up a veggie garden up at the school, have 'a garden in a shoe' contest using the compost or sell the compost to garden enthusiasts.*

- *Technology idea - Design a class recycling unit (.e.g. a group of bins for material to be recycled). Brainstorm what features it should have? Implement the best class design in the classroom.*

- *A consumer survey - Do you think people will change their ways? Create a survey to test parents and friends whether people really would change their ways….e.g. present a series of pictures of wrappings around food items – get them to select the pictures of wrappers that they preferred (don't tell them what the wrapper material is made out of)… Is the brown paper bag more appealing than a bright plastic wrapper? Present the findings in a classroom poster. See below for a selection of pictures the use for 'flash cards'.*

- *Crazy economics – Does it make sense to send our rubbish overseas? And what about the food we eat? Discuss with the class the environmental impacts of transportation of both our rubbish and our food. Create a math activity working out how much it costs to send plastic to China based on diesel prices and distance to China. That is, What is the environmental 'cost' or 'dollars' sending our waste overseas? Does the burning of petrol/diesel used for transport outweigh the benefits of recycling in NZ?. Ask the students to look in their pantry cupboard at home – how many items are locally grown/manufactured? What about their favourite flavoured milk or meat pie?*

- *Technology idea - Create a poster or pamphlet using computer graphics informing the public about 'HOW WE CAN REDUCE RUBBISH' or A step by step guide to how we can get rid of food scraps and garden rubbish (e.g. wormfarm, compost or Bokashi system).*

- *Check out some other schools involved in environmental education and solid waste projects (Hint: look at the* 'Did you know' *facts below). Take a group of 'ambassadors' along to the school or invite some children from the other school along to see what you and the class have been busy doing!*

- *Form a 'WASTEAWARE' club. The club can plan and implement other waste minimisation projects around the school. Invite children through out the school to join the club and help out with reducing waste within the school.*

- *Organise rubbish free days – school to organise rubbish to be taken home (e.g. from lunch boxes) or composted in the school compost.*

- *3R's in the school – reduce, reuse and recycle. Have a fun day focus on each. For example, have a school garage sale (include the compost from the worm farm!) or swap shop (swap shop items advertised in the school notices, on a notice board).*

- *Create collages out of waste or a waste minimisation poster reusing waste wrappers or plastic containers or create a mural with waste messages for a school wall or rubbish bins.*

- *Create a rubbish tower or statue or mound that represents the amount of/height of rubbish that gets taken to Omarunui landfill on one day. Place it in a prominent site at the school! Hint: 329 tonnes of rubbish goes to the Omarunui landfill in one day.*

- *Create a TV drama about waste or be involved with a radio talk back show. Present it to the school and the wider community. Hint: Hawke's Bay Radio Kidnappers 1431 AM run a fortnightly Waste Weka radio show. See details in the Where from Here support list below.*

- *Technology idea - Ask the students to design a composting system based on the class research on compost bins and wormfarms. Use the best design or a combination of designs to create and implement a school composting system.*

- *Send out a challenge – Write a letter or email to your local supermarket or food manufacture setting them a challenge to have more recyclable, biodegradable, reduced packaging items on their shelves and select more locally or NZ made products.*

- *A school challenge – Present a challenge to your Principal to have a 'green' purchasing policy and the aim to have no rubbish at the school.*

- *A parent and business challenge – Ask the parents to involve their business in a REDUCE WASTE challenge. An idea maybe to compare quantity of school waste with the quantity business waste, on a per person basis. Bonus points could be given for ACTION initiatives such as introducing a composting and Bokashi system (ask the Waste Aware co-ordinator for support with this or check out the Where from Here support list below).*

- *Letter Dump - Write letters to NCC, HBRC, local businesses and manufacturers about solid waste issues that the children have identified during the Waste Aware programme for example, issues with packaging and recycling plastic in China. Green rubbish recycling at the landfill and being used in city council gardens.*

Did you know…

Where to start? The problem TOO BIG to tackle?
We all need to identify where we can have the greatest impact in improving our environment.

First…

REDUCE

(Shop sensibly and ask manufactures to reduce packaging)

Secondly…

REUSE

And thirdly

RECYCLE

New Zealand recycling is up there with the rest of the world! Glass bottles in NZ contain up to 50% recycled glass – one of the highest percentages in the world!

Hawke's Bay schools are making a difference!

Schools and students are getting in there with waste minimisation (e.g. making schools a rubbish free zone), native planting and energy conservation projects occurring across the school and in the community.

Green-gold Enviroschools award: Pukehou school.
Silver Enviroschools award: William Colenso College, Hastings Intermediate School and Nelson Park.
Bronze Enviroschools award:, Taradale Intermediate, Hastings Central School, Wairoa College, Tutira, Waimarama, Taradale Primary School, Mangaorapa School, Central Hawke's Bay College, Argyll East School, Eskdale School and Napier Girls High School.

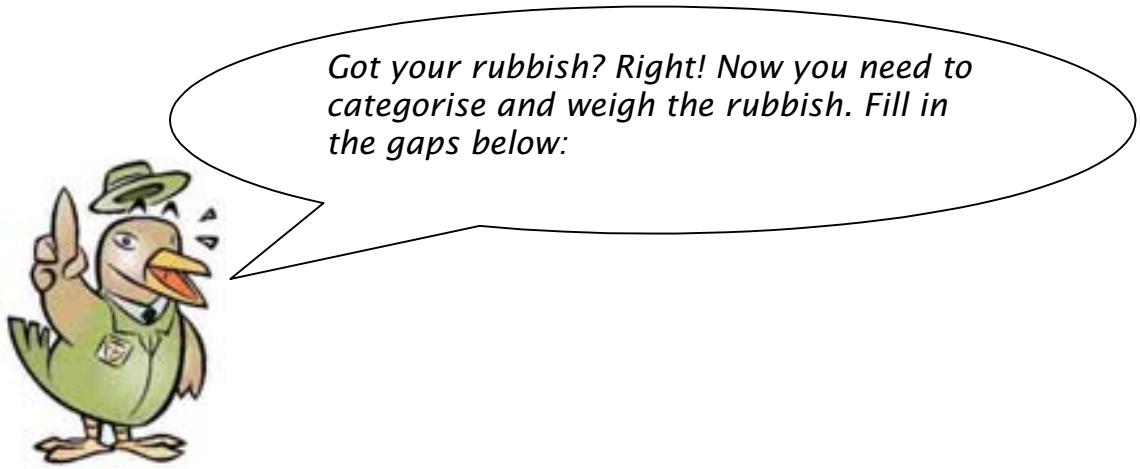
To get involved in the HB Environmental Awards and Enviroschools programme contact the Enviroschools Regional Co-ordinator and the Environmental Education Advisor at the Hawke's Bay Regional Council (Emily Rockwell ph 06 833 8036, email: Emily@hbrc.govt.nz).

Find out more about Education for Sustainability – Adviser to Schools , Christine Morrison, Massey Centre for Educational Development, Ruawharo Centre, EIT, Taradale. Ph 06 845 9390 Ext 80705, 027 629 0299

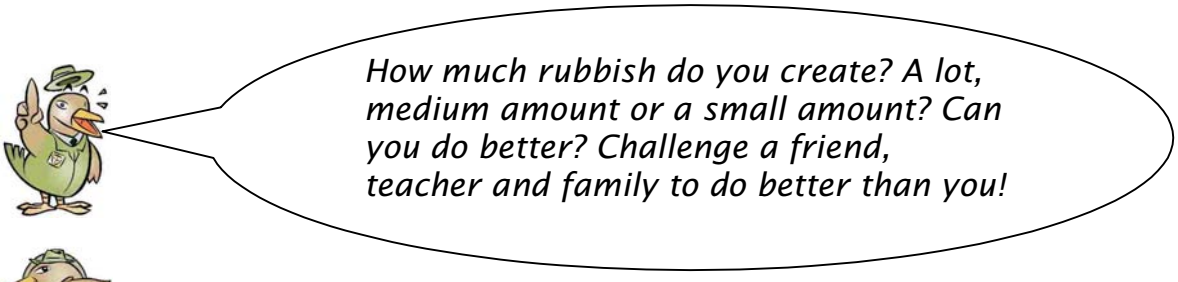
Waste Aware Personal Rubbish audit for .....

(name)

How much rubbish do you create? Put you rubbish for the day (including lunch rubbish!) in your own special 'rubbish for the day' bag instead of in the bin.



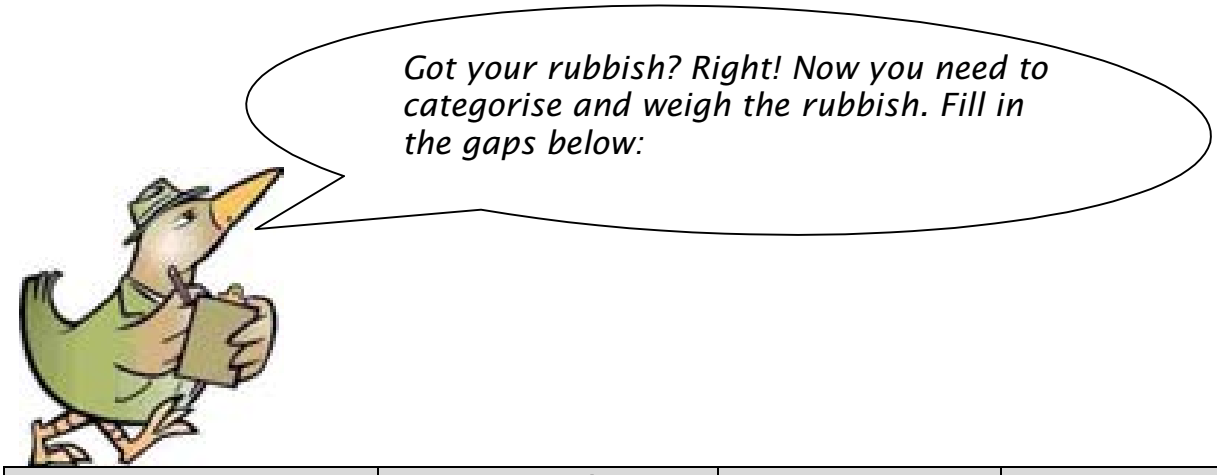
Rubbish type	*Number of items*	*Weight*
Plastic		
Paper/Cardboard		
Organic material		
Glass		
Tin		
Aluminium		
Other:		
Totals		



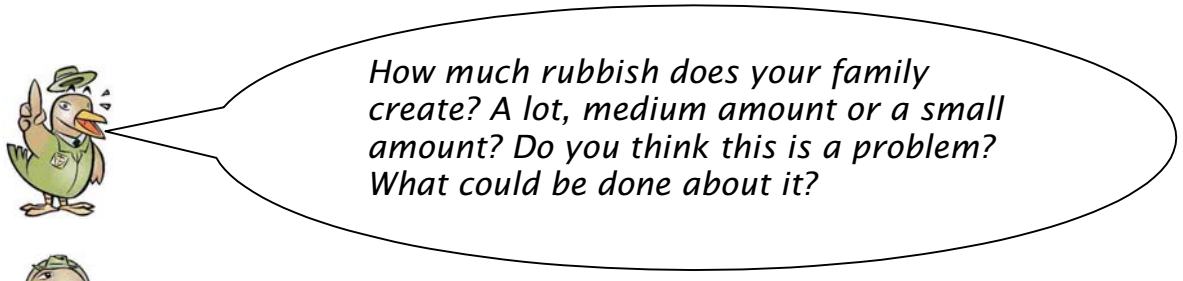
Waste Aware Household Rubbish audit for the .....

(surname)

How much rubbish does your family create? Put all your rubbish for the day (including food scraps!) in your own special 'rubbish for the day' box instead of in the bin or compost.



Rubbish type	*Number of items*	*Weight*	*Percentage of total rubbish*
Plastic			
Paper/Cardboard			
Organic material			
Glass			
Tin			
Aluminium			
Other:			
Totals			



Waste Aware School Rubbish Audit

Date collected:

Location where school rubbish was collected:

Rubbish type	*Number of items*	*Weight*	*Percentage of total rubbish*
Plastic			
Paper/Cardboard			
Organic material			
Glass			
Tin			
Aluminium			
Other:			
Totals			

Display the data in bar graphs or pie charts. Estimate how much rubbish the school produces in a year. Can your school do better? How much of the school rubbish could be recycled? Try this audit again after the school 'Waste Aware Action' is completed – does the action make a difference to the school rubbish audit?

Reuse your waste – Check this out !!!

THE FINAL WORD

SNAP HAPPY

Hey, don't toss that rubbish

That yoghurt pot you threw out four months ago may have been resurrected.

Though it was absolute rubbish then, it could be hanging in an exhibition at Porritt School in Tamatea right now as a thing of art and beauty.

More than 700 art pieces made from recycled products like bottles, egg cartons and other bin-rummaging finds have been reborn as things of beauty, created through the eyes of children.

After studying sustainability, the students found themselves assessing common perceptions of just what is rubbish — and found that one man's trash really can be another's treasure.

Principal Sonya Aifai said she could not stop herself from leaving her office several times daily to revisit the exhibition.

"I have just been astounded at the standard of art they produced. A lot of it you can't actually tell it's made out of rubbish," she said.

Pieces include giant masks, sculptures and a miniature town made from recycled materials.

RUBBISH REBORN: Zane Kinder and Ashlee Osgood and art made from recycled rubbish at Porritt School.
PICTURE / DUNCAN BROWN HBT083402-01

SUBMIT A PIC

To have your pictures published in "Snap Happy", email them to readers@hbtoday.co.nz with "Snap Happy" in the subject line, or post to "Snap Happy", *HB Today*, PO Box 180, Hastings. Please include name and contact details.

Waste Aware - **Where does that PLASTIC recycling go?**

The life-cycle of a plastic bottle…

The bottle gets made in
_____
_____
_____

The bottle gets filled with your favourite drink in _____
_____
and shipped to your local shop.

You buy the drink , slurp it down and… yeah that's right the bottle gets recycled!

The bottle ends up a the recycling depot where it is transported to_____
_____

The bottle is chipped and transported to ____
_____
_____

The bottle eventually turns into a _____
_____
_____

This plastic recycling is an example where the plastic becomes something else! Do you know another material that can be recycled into the same thing?

Waste Aware - **Where does that GLASS recycling go?**

The life-cycle of a glass bottle…

The bottle gets made in
_____
_____
_____

The bottle gets filled with your favourite drink in _____
_____
and shipped to your local shop.

You buy the drink , slurp it down and… yeah that's right the bottle gets recycled!

The bottle ends up a the recycling depot where it is transported to_____
_____

The bottle is chipped and transported to ____
_____
_____

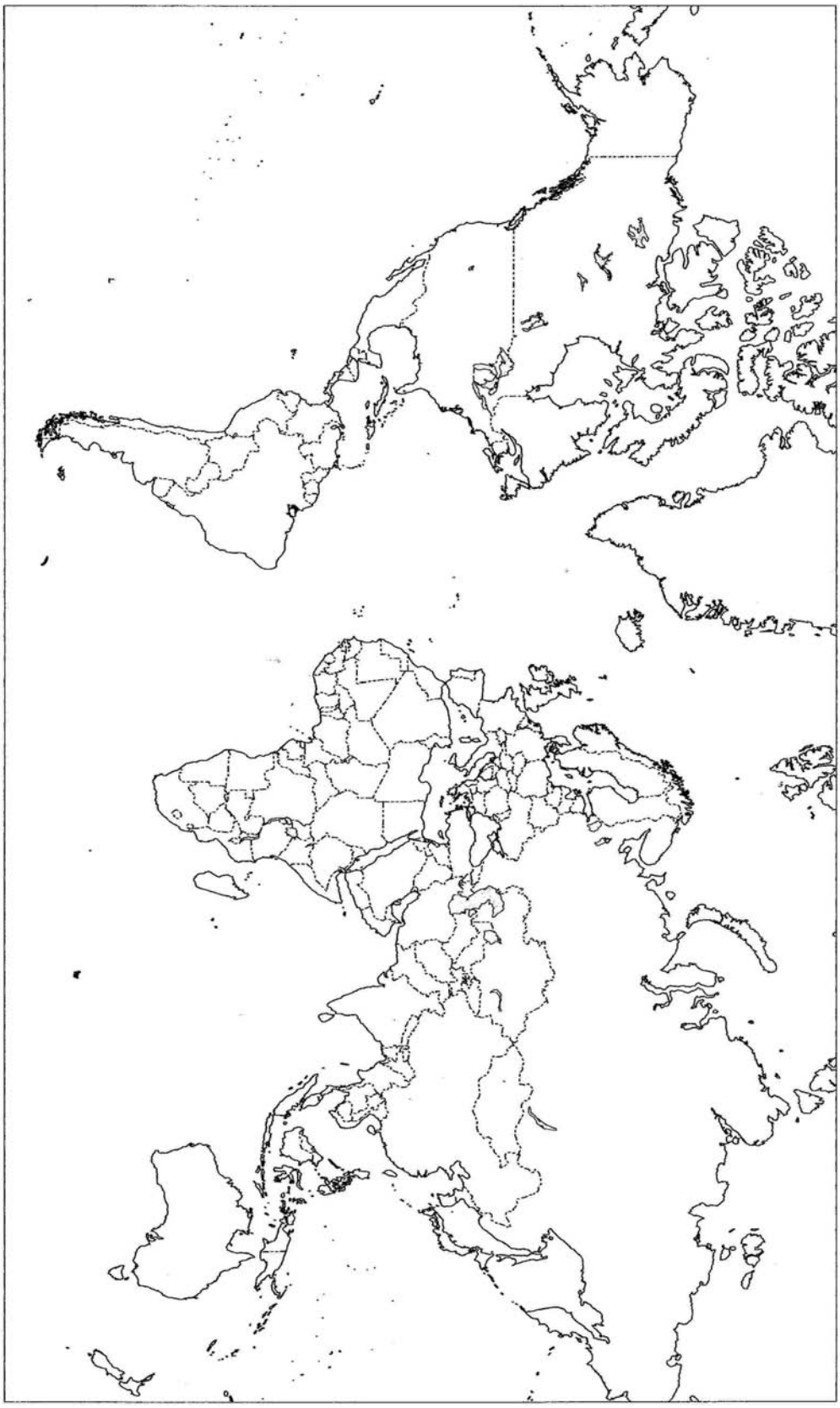
The bottle eventually turns into a _____
_____
_____

This glass recycling is an example where the glass can be made into the same thing (another glass bottle!). Do you know another material that can be recycled into the same thing?

Waste Aware - Where does that recycle rubbish go?

Mark on the world map where the recycling material goes. Colour in the countries that recycle to different materials. Make a key to help explain your map.

The World



A consumer survey - Do you think people will change their ways?

Use these flash cards (and some of your own flash cards) to present to target groups – get them to select which the styles of 'wrappings' they like and ask them why. Is the brown paper bag more appealing than a bright plastic wrapper?

'Where from Here' support list

People to contact:

For composting and Bokashi systems,
Environment Centre Hawkes Bay ph: 870-4942, info@shbt.org.nz. (Note: Napier City Council will support Napier schools setting up composting systems, contact Ricki Freemantle, rickif@napier.govt.nz).

For media studies and reporting about the school WASTE AWARE ACTION,

Hawke's Bay Radio Kidnappers 1431 AM run a fortnightly Waste Weka radio show. Contact: Ricki Freemantle rickif@napier.govt.nz

Television Hawke's Bay, Murray Sawyer (Managing Director). Ph +64 6 835 3351 P.O. Box 262, Napier, NZ. Contact: murrays@tvhb.co.nz / http://www.tvhb.co.nz

For school programmes and awards,

Hawke's Bay Environmental Awards and Enviroschools programme. Contact: Emily Rockwell, Hawke's Bay Regional Council ph 06 833 8036, email: Emily@hbrc.govt.nz.

Education for Sustainability. Contact: Christine Morrison (Adviser to Schools), Massey Centre for Educational Development, Ruawharo Centre, EIT, Taradale. Ph 06 845 9390 Ext 80705, 027 629 0299, email: C.J.Morrison@massey.ac.nz

For other environmental programmes and useful people to know about,

Environmental Education Resource people, Website: www.hbrc.govt.nz/GetIntoIt/EnvironmentalEducationResourcePeople

Report back to co-ordinator…

This template is to help your class report back to the Waste Aware co-ordinator about the success of your Waste Aware pledge – Please include photos!

The Waste Aware pledge was to…

Step 1. We started by…

Step 2. We then did…

Phew!
What were some of the problems that needed solving?…

Step 3. Finally we did…

WE MADE IT!

Congratulations!

We achieved our pledge and other Waste Aware ideas we have started to think about are…

References and other useful resources and links…

Napier City Council – information about kerb side rubbish collection (FAQs), what can be recycled, composting and Omarunui landfill.
www.napier.govt.nz

Hastings District Council – information about rubbish, recycling and wormfarms, the history of Omarunui landfill and parts of the land fill (a good diagram).
www.hastingsdc.govt.nz

Hawke's Bay Regional Council – information about the pollution hotline and environmental education.
www.hbrc.govt.nz

AllBrite's recycling – Information about the recycling process (i.e. where the rubbish is recycled) and what recycled products are used for.
www.allbriteonline.com/recycling_know_how

Hawke's Bay Waste Exchange – information about how companies and people exchange and reuse waste. Check out the success stories.
www.nothrow.co.nz

Zero Waste– information about what you can do, definition of what waste is and much much more.
www.zerowaste.co.nz

EnviroSchools – information about the programme and examples of enviroschools and what they have done. Extra resources on the waste topic.
www.enviroschools.org.nz

Making a model landfill – A guide to making a student model landfill.
www.dnr.state.wi.us/org/caer/ce/eek/teacher/pdf/recycle/k3/MakingAModelLandfill.pdf

Christchurch City Council – Loads of great information about waste, recycling and wormfarms.
www.ccc.govt.nz

Auckland Regional Council – Loads of great information about waste, and recycling.
www.arc.govt.nz

Ministry for the Environment – Detailed information about environmental issues effecting New Zealand. Some information about leachates.
www.mfe.govt.nz/issues

Reduce your rubbish – information about 'the problem', recycling, shopping environmentally, making a difference at work.
www.reducerubbish.govt.nz/problem/index.html

What's your next step – information about how to take steps to being more sustainable in your daily life.
www.sustainability.govt.nz

Biodegradable plastic bags – about the plastic bags that degrade even in the open air. Contact details for purchasing biodegradable plastic bags.
www.eco-pal.co.nz or www.degradable.net

Plastic information – information about plastic and useful information for the plastic debate
www.plastics.org.nz

Why PVC is bad news – information about the problems with polystyrene.
www.organicdirect.co.nz/resources

Plastic debate – resource notes for junior school project about plastic.
www.calibre.co.nz/plastics.htm

Packaging in New Zealand – information about the principles behind packaging and a teachers resource.
www.pac-it.org.nz

Victoria University School of Architecture – Student designs on ways to use and reuse plastics and polystyrene.
www.victoria.ac.nz/architecture/sustainability/plastics_polystyrene.aspx

The Cell phone debate – Information about the 'life-cycle' of the cell-phone, ideas about reducing and recycling.
www.epa.gov/epaoswer/education/pdfs/life-cell.pdf

Landfill leachate – information about what is leachate? and other useful information about landfills.
www.portfolio.mvm.ed.ac.uk/studentwebs/session4/7Leachate.htm

Trash goes to school – information about landfill leachate and other school activities.
http://cwmi.css.cornell.edu/TrashGoesToSchool/Landfill.html

How to trace leachates from landfills – information about a university students prize winning study.
www.frst.govt.nz/news/2005/MacdiarmidOverallWinner-Jun05.cfm

Lechates and effective waste management – another Christchurch City Council resource.
www.ccc.govt.nz/Publications/EffectiveWasteManagement/Unit4.pdf

Marineland of New Zealand – Amazing facts about marine animals such as common dolphin, NZ fur seal and little blue penguin.
www.marineland.co.nz

National Aquarium of New Zealand – Check out the environmental issues pre and post visit resource.
www.nationalaquarium.co.nz

Rubbish and the marine environment – What your school can do and rubbish collection along the coastline.
www.sirpeterblaketrust.org/environment/care-for-our-coast_results_summary.

Ecology-on-line, tui time – Information about life cycles and decomposition (especially about worms!).
www.tuitime.org.nz

A word on waste – A teaching unit out there on rubbish.
www.arc.govt.nz/albany/fms/main/Documents/Council/Education

Reduce, Reuse, Recycle: Unit plan – A teaching unit on rubbish.
English.unitecnology.ac.nz/resources/units/recycle/home.html

Tidiness – A teaching resource.
www.ccc.govt.nz/KeepChristchurchBeautiful/Resource/TidinessTeachingResorce.pdf

TKI Reduce, Reuse, Recycle: Unit plan – A teaching unit on rubbish.
www.tki.org.nz/socialscience/curriculum/SSOL/recycle/index_e.php

Education world – information about 3R's, taught in five lessons.
www.educationworld.com/a_lesson/lesson308.shtml

Useful books:

City Green. Dyanne Desilvo-Ryan, Harper Collins, 1994.

Creative costumes: recycle material to make fun costumes. Ecocrafts, Kingfisher, London, 2007.

Dealing with waste. Morgan,S. FranklinWatts, London, 2006.

Don't throw it out. Baird and editors of Yankee Magazine, 2007.

Dream bedroom: use recycled materials to make cool crafts. Ecocrafts, Kingfisher, London, 2007.

Earth Day Hooray! Stuart J. Murphy, Harper Collins, 2004.

Guidelines for Environmental Education in N.Z. Schools. MoE, Learning Media. 1999.

How to Succeed with Education for Sustainability. Josephine Lang, Curriculum Corporation, Australia, 2007.

It's True! This book is a load of rubbish. Deborah Burnside, Allen &Unwin, 2005.

Jazzy jewellery: recycled materials to make cool accessories. Ecocrafts, Kingfisher, London, 2007.

Recycle every day! Nancy Elizabeth Wallace, Marshall Cavendish, 2006.

Rubbish! Everything you ever wanted to know about rubbish, landfills, recycling and worms. Goddard, R., Reed, Auckland, 2007.

Rubbish and recycling. Stephanie Turnbull, Usborne, London, 2005.

The great trash bash. Loreen Leedy, Holidayhouse, 2000.

The Lorax. Dr. Suess, Random House, New York. 1999.

The paper bag prince. Colin Thompson, Dragonfly books, 1997.

The stinking story of rubbish. Daynes, Katie, Usborne, London, 2006.

The Three Fishing Brothers Gruff. Ben Galbraith. Hodder Children's Books, London. 2006.