

Kirihou Plastics

Plastics are everywhere.
What can we do to reduce our reliance on this material?

Focus

The focus of this context is to create student awareness of how they can reduce waste by reusing and recycling products.

This set of resources will enable ākonga to consider better solutions for packaging, processing, and disposing of plastic products.

Students will create a range of tech outcomes that promote and provide evidence of a better solution to that of single use plastic products.

Links

[Technology in the New Zealand curriculum](#)
[Glossary of technological terms](#)

Elderly Kaumātua	Electric vehicles Waka hiko	Feed the team Whangāia
Health Hauora	Identity Tuakiri	Plastic Kirihou
Rubbish overload Tūwhiti rāpihi	Shelter Tāwharau	Transportation Waka
	Water Wai	

Keen to find more resources?

Go to the authentic curriculum resources on the Grow Waitaha website and select the Year 7/8 technology resources filter.

Horopaki Learning contexts

Choose a learning context:

Upcycling products

The country has gone into lockdown and the council is no longer able to recycle plastics. If we don't find a better solution, all our rubbish will go to the landfills.

Design a presentation

In most areas of New Zealand, plastic is still one of the main products used in packaging. Despite a move away from single use plastic bags, there is still a lot of plastic on our shop shelves.

Recycling plastics

Plastic is a reusable resource that doesn't break down easily. In order to protect our environment and ensure we have access to plastic in the future, we need to think carefully about how we recycle and reuse plastics.

Design an action figure

Children love action heroes and with the shops being shut they are unable to buy new toys.

[#growrealllearning](#)

[#growcollaboration](#)



The Context/Horopaki: The country has gone into lockdown and the council is no longer able to recycle plastics. If we don't find a better solution, all our rubbish will go to the landfills.

The Brief 1: You are to explore potential upcycled plastic products.

The Brief 2: You are to create a holder or stand for an everyday object in your home using plastics from the recycling bin.

(WALT) We are learning to:

- investigate the properties of plastic by creating new products.
- solve everyday problems with recycled materials.



Activity 1 Upcycling plastic

1. Search on the internet and find two different [upcycled bottle projects](#). Have a go at making them.
2. Watch video 1 about creating a plastic bottle water sprinkler.
3. Make your own sprinkler.
4. Make two different sprinklers by experimenting with the hole sizes and number of holes.
5. Test which sprinkler sprays the furthest and graph your results.
6. Using other plastic bottles, develop a stand that keeps your bottle up the right way.
7. Send a photo or video of your best sprinkler and some of your other creations to your teacher.

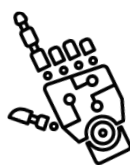
Activity 2 Holder challenge

1. Identify a key stakeholder in your home or wider family.
2. Ask them to identify a product that needs a storage solution within your home, e.g. remote controls, pens and pencils, jewellery. The main resource you need to use is plastic from the recycling bin.
3. Sketch your design ideas and get your stakeholder to give you feedback on what they think will work.
4. Develop a prototype of your design.
5. Test that your prototype solves the need (i.e. can hold whatever your stakeholder has asked for).
6. Ask your stakeholder for feedback on your prototype.
7. Make any changes they suggest and finish it to the best standard you can.
8. Send a photo of your design and your finished holder to your teacher.

Digital resources/Rauemi

1 Upcycled water sprinkler

<https://www.lifehacker.com.au/2014/08/make-a-simple-garden-sprinkler-from-a-plastic-bottle/>



Material resources/Rauemi

Plastic bottles
Electrical tape/hot glue
Paper
Paints or permanent markers
Drawing pin/compass or cordless drill





The Context/Horopaki: In most areas of New Zealand, plastic is still one of the main products used in packaging. Despite a move away from single use plastic bags, there is still a lot of plastic on our shop shelves.

The Brief 1: You are to develop an advertising commercial that highlights why people need to recycle plastic.

The Brief 2: You are to complete a mini research project on plastic in your home. You are to develop a plan for how you can minimise the waste of plastic through systems, recycling or upcycling.



(WALT) We are learning to:

- persuade people to recycle plastic.
- research an environmental issue related to plastic and present our ideas.



Activity 1 Recycling advert

1. Watch videos 1-3 to find out about plastic recycling. Identify three key reasons why we need to recycle plastics.
2. Create a catchy slogan or jingle that will help the audience to remember your ad.
3. Write a script for your advertisement that highlights the key reasons why we need to recycle.
4. Present your advert as a movie, a stop-motion animation or as a radio advert. The maximum time available for the advert is 30 seconds.
5. Email a copy of your video/animation or sound file to your teacher.

Digital resources/Rauemi

1. Virtual tour of a recycling centre
<https://www.youtube.com/watch?v=zgLW9CSvpRw>
2. What really happens to the plastic you throw away
<https://www.youtube.com/watch?v=6xINyWPpB8>
3. Why we need to stop plastic pollution in our oceans
<https://www.youtube.com/watch?v=Yomf5pBN8dY>



Activity 2 Recycling plastic at home

1. Choose an area of your home to complete a research inquiry on, e.g. the pantry, kitchen, bedroom, garage, lounge.
2. Identify all of the plastic in your chosen area.
3. Make a [spreadsheet](#) or table of your results. Make a record of:
 - the name of the items
 - the quantity of each item
 - whether they are recyclable.
4. If possible, include photographs of the items.
5. In the last column of the spreadsheet/table, list what you could do to ensure the plastic doesn't end up in a landfill? Think of innovative recycling/upcycling ideas and add them to your spreadsheet for each item.
6. Create an infographic display of your results. You can create a poster or use a digital design software such as canva.com.
7. If possible, display the infographic/poster in the room to remind your family to be mindful of what they do with old plastic items.
8. Share a copy of your infographic/poster and spreadsheet/table with your teacher.



The Context/Horopaki: Plastic is a reusable resource that doesn't break down easily. In order to protect our environment and ensure we have access to plastic in the future, we need to think carefully about how we recycle and reuse plastics.

The Brief 1: You are to make an interactive presentation that highlights the key issues in the life cycle of a plastic bottle to help encourage junior school students to recycle.

The Brief 2: You are to research ways to recycle plastic and experiment with one of the processes you find to create a new form.

(WALT) We are learning to:

- identify the effects of a plastic product on the environment by completing a life cycle analysis
- explore the properties of plastics.



Activity 1 Life cycle of a plastic bottle

1. Watch videos 1 and 2 about the life cycle of plastic bottles.
2. Answer the following questions:
 - What are the key steps in the life cycle of a plastic bottle?
 - What are the key problems the life cycle of a plastic bottle causes? Think about CO₂, water, land, pollution, and electricity.
3. Locate images that represent each stage of the life cycle.
4. Create a presentation that highlights the key issues in the life cycle of a plastic bottle and will encourage Year 1–2 students to recycle. Use a digital tool you think would make an appealing presentation, e.g. Google Slides, PowerPoint, [Canva.com](https://www.canva.com) (search for 'cycle diagram'), [Scratch Interactive](https://scratch.mit.edu).
5. Share a copy of your presentation with your teacher.

Activity 2 Recycling plastic

1. Look at digital resource 3 (below) about reusing HDPE plastic.
2. Read [this chart](#) and locate the different types of plastic in your home.
3. Ask your parents/caregivers before trying the rest of this activity. Find some HDPE (#2) plastics to recycle—milk or detergent bottles and tops, ice cream containers.
4. Remove labels and cut them into small pieces.
5. Put a layer of baking paper on an oven tray and place the plastic in the middle of the paper.
6. Turn on the oven to about 180 degrees and heat the plastic until it changes to a clear colour (1–5 minutes). The temperature may need to be slightly hotter or cooler depending on your oven.
7. Remove the plastic from the oven and use oven-safe gloves and wooden sticks to roll or fold the plastic together and mix the colours.
8. Heat and repeat until you have moulded the plastic into a shape and style you like. What could you do with this new plastic?
9. Email a photo of your new plastic to your teacher along with a description of what you think you could make with it.

Digital resources/Rauemi

1 Life cycle analysis

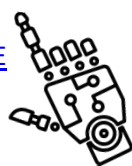
<https://www.youtube.com/watch?v=-9JRowyICbo>

2 Life cycle of a plastic bottle

<https://www.youtube.com/watch?v=erGnf7ws20E>

3 How to reuse HDPE plastic

<https://www.instructables.com/id/HDPE-Blocks-From-Plastic-Bottles/>



Material resources/Rauemi

Baking paper

Old milk bottles, lids and other HDPE plastic

Heavy-duty gloves or wooden blocks to mould the plastic



The Context/Horopaki: Children love action heroes and with the shops being shut they are unable to buy new toys.

The Brief 1: You are to get creative and design and make a prototype of an action figure from your waste plastics along with other craft materials in your home. You should consider a 3–6 year old child you know and design the toy for them.

The Brief 2: You are to either take your action figure on a holiday using green screen technology ([see Video 1](#)) or develop a short film using your action figure as the lead actor.



(WALT) We are learning to:

- be creative and develop products from limited resources.
- develop interesting outcomes using green screen software.



Activity 1 Create an action figure

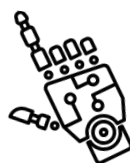
1. Identify what plastic resources you have in your recycle bin.
2. Draw a picture of your action hero design.
3. Develop a name for you hero and list their attributes, e.g. strong, flexible, fast.
4. Construct your new action figure using your plastic waste as the core of the body.
5. Develop ways you can move your action figure and have them stand and sit on their own.
6. You can use other resources and construction methods as needed, for example:
 - tape
 - aluminium foil
 - papier-mâché
 - glue.
7. Send a photo of your completed action figure to your teacher along with a list of their attributes.

Activity 2 Green screening

1. Use green screen techniques to create either a photo slideshow of your action figure on holiday OR a short action movie starring your action figure. To begin, watch video clips 2–3.
2. Decide on the best tool to develop your green screen presentation or video. We suggest [Chromavid](#) or iMovie.
3. If you are creating a photo slideshow:
4. Find some background images, perhaps world landmarks or family photos.
5. Take a green screen photo of your action figure posing to match each scene.
6. Add the completed photos to a google slideshow or PowerPoint.
7. If you are creating an action film either:
8. Record it directly in Chromavid with the backgrounds, OR
9. Record it with a green screen and mix with different backgrounds in iMovie.
10. Share the slideshow/video with your teacher.

Digital resources/Rauemi

- 1 What is green screen technology?
https://www.youtube.com/watch?v=A0h_BVLRSeI
- 2 Chromavid intro
https://www.youtube.com/watch?v=IC2iH_FG1fs
- 3 Creating green screen
<https://www.youtube.com/watch?v=sa8CbsV3Czg>



Material resources/Rauemi

- Tape
- Glue
- Recycled plastic
- Aluminium foil/tape
- A plain-coloured background (blue, yellow, red or green) for the green screen task
- A smart phone or smart device

