

Theme three: Human impact on the Harbour

Level 3 Social Science

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Human impact on the Harbour

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Achievement Objectives:

- Understand how cultural practices vary but reflect similar purposes.
- Explore how people view and use places differently.

Conceptual understandings:

- Plants and animals in Porirua Harbour and Catchment live in an environment best suited to them and are affected in many ways by changes to their habitat.
- Different values and perspectives influence the decisions people make about use of Porirua Harbour and Catchment and its resources.
- Human decisions, including our own decisions, can affect the environmental sustainability of Porirua Harbour and Catchment, both positively and negatively.

Level 3 Science

Achievement Objectives:

- Explain how living things are suited to their particular habitat and how they respond to environmental changes, both natural and human-induced.
- Explore various aspects of an issue and make decisions about possible actions.

Learning framework

Links to social inquiry approach	Activities	What to look for
Establishing what we know		
Focus of learning topic What is a resource?	1. Resource Concept Map 2. Our school resources	Building conceptual understandings <ul style="list-style-type: none"> • Student understanding of key concepts concerning resources such as scarcity, value, and use of.
Experiencing the Harbour		
Selecting a context What are the resources within the Porirua Harbour & Catchment?	3. The Porirua Harbour as a resource 4. Field trip – train journey through the catchment	Deepening understanding <ul style="list-style-type: none"> • Student understanding of how different people benefit from the Porirua Harbour. • The ecological values of the harbour and catchment. • The types of ways people impact on the harbour
Building on knowledge		
Finding information Who decides how we use the harbour's resources?	5. Using the harbour	Deepening understanding of <ul style="list-style-type: none"> • The different ways people use the harbour. • The issues taken into consideration when making rules regarding access to the harbour.

Planning for action		
<p>Exploring values and perspectives</p> <p>The Porirua Harbour is a resource for people to enjoy. Do you agree?</p> <p>Considering responses and decisions</p> <p>How can rules be used to protect the Harbour?</p>	<p>6. Rules for protection</p> <p>7. Using rules to solve problems</p> <p>8. Solving problems using POOChI</p> <p>9. Student POOChI activity</p>	<p>Developing critical thinking by encouraging students to:</p> <ul style="list-style-type: none"> • Look for different groups' values and perspectives around their resource. • Analyse different responses and decisions to their particular resource • Evaluate the consequences of changes to rules concerning their resource • Decide what is the best way to ensure people have sustainable access to the resource, now and in the future.
So what, now what		
<p>Social action</p> <p>What rule would I create to protect the harbour?</p>	<p>10. Our rules to protect the harbour <i>Reflection, presentation & celebration</i></p>	<p>Deepening sense of kaitiakitanga by Fostering a sense of responsibility for the harbour, through the process of:</p> <ul style="list-style-type: none"> • Identifying a problem that exists • Finding a solution to this problem • Working towards achieving their desired outcome

Establishing what we know

Activity 1: Resource concept map

Write the word Resource on the board and discuss its meaning. As a class, make a Concept definition map with the following categories: Definition, Synonym, Associated with and Examples.

Activity 2: Our school resources

In groups of three, ask students to brainstorm any resources they use in their school. Use Extended Brainstorming to help them think more deeply:

- Fluency: Brainstorm as many resources as they can. E.g: water, electricity, gardens, sports equipment, computers, books, teachers, etc.
- Flexibility: Categorise their ideas then add 2 ideas to each category. For example they may have categories of time, knowledge, technology, comfort, and relationships.
- Originality: Think of two ideas that don't fit into any of their categories.
- Elaboration: Use a ranking ladder to rank their resources from most scarce to least scarce. Use another ranking ladder to rank their resources from the most valuable to the least valuable (from their perspective)

Ask the groups to leave one defender with their paper, while the rest circulate to look at the other groups' work and ask questions of the defender.

As a class, discuss the following questions:

1. How different or similar were the groups' opinions?
2. Did all the groups agree on which resources were the scarcest or the most valuable? If not, why not?
3. Are the scarcest resources always the most valuable?

Choose one resource for each group of three and ask the students to discuss these questions:

1. Who decides how this resource gets used? For example, who gets to use it and for what purpose?
2. What does that person, or those people, consider when they make decisions about how the resource gets used?
3. What can you do if you disagree with what that person has decided?
4. What is the impact of that use on the resource?

Experiencing the harbour

Activity 3: The Porirua harbour as a resource

Explain to students that they are going to explore how the harbour is used as a resource.

Watch the *Living Waters* episode: [February: Fishing](#). Ask your students to identify the resources from this documentary. For example: shellfish, fish.

Use the Extended Brainstorming techniques from the diagnostic section to brainstorm as many resources they can think of from within the Porirua Harbour and Catchment.

Activity 4: Train journey through the catchment

Travelling by train is an excellent way to experience the harbour and catchment. It's possible to travel from Plimmerton through to Takapu Road and observe the different types of habitats in the catchment (swamp, outer harbour, Onepoto and Pauatahanui arms, and streams), as well as visible evidence of how human activity has impacted on the quality of the harbour as a natural resource. For example Porirua Stream changes a lot from Takapu Road Station through to Porirua Station. Healthy natural edges through to unhealthy looking water, litter and hard artificial edges once it gets closer to the industrial zone of Kenepuru. Students will also be able to observe a variety of human activities that would have an impact on the harbour such as roads and housing, farmland, stormwater outlets, the reclaimed land around Mana Marina and so on. Planning a scavenger hunt type activity beforehand will help focus student's attention and guide their observations. There are also opportunities to get off the train to either explore streams and waterways (e.g. Takapu Road or Redwood), or the outer harbour such as Plimmerton Beach.

As with all field trips we strongly urge teachers to visit the site prior to taking students there. The Ministry of Education has excellent guides for safe outdoor experiences:

<http://eotc.tki.org.nz/EOTC-home/EOTC-Guidelines>

Information about train timetables and costs can be found here:

<http://www.metlink.org.nz/>

Or phone 0800 801 700

Building on knowledge

Activity 5: Using the harbour

Choose one of the resources from activity 3 and answer the following questions as a class. Some teachers may wish to choose a resource that is relevant for their students, such as a waterway near their school.

1. What are the natural habitats present within this resource?
2. What plants and animals are in this habitat?
3. How are they suited to that habitat?
4. How have humans impacted this resource, either positively or negatively?
5. In what ways has the human impact affected the habitat of any plants or animals?
6. How have the plants or animals adapted to this impact?
7. Who makes the decisions about the access to or use of their resource?
8. What factors would they take into consideration before making a decision?
9. What decisions or rules have been made for their resource?
10. What problems do these rules address?

11. How are these decisions or rules implemented?

Provide students with further material to help them find the answers to these questions.

- *At the Beach – explore and discover the New Zealand sea shore* by Ned Barraud & Gillian Candler. Refer to the pages about mudflats to guide student's learning about the plants and animals that they could expect to find in the Pauatahanui Inlet.
- This title in the Building Science Concepts series is about the intertidal zone and contains activities to extend this aspect of the topic: <http://scienceonline.tki.org.nz/What-do-my-students-need-to-learn/Building-Science-Concepts/Titles-and-concept-overviews/Tidal-Communities>
- The Porirua Harbour and Catchment Strategy and Action Plan describes the big three issues facing the harbour and outlines actions from stakeholders to aid its recovery and restoration: <http://www.pcc.govt.nz/DownloadFile/Publications/Harbour-Management/Porirua-Harbour-and-Catchment-Strategy-and-Action-Plan-March-2012>

You may want to choose some of [these graphic organisers](#) or [this Inquiry Chart](#) to help students organise the information they find. This could be linked to the class literacy programme so groups can analyse further material in the guided reading sessions.

Optional extension: once the students have completed this activity as a class, they can repeat it for a harbour resource of their own choice. Some students may be able to locate information independently, others may use materials found by the teacher.

Planning for action

Activity 6: Rules for protection

Some rules are created to help protect natural resources. These rules affect different people in different ways. On the other hand, rules can also permit activity that is detrimental to the resource. These activities look at the ways rules, and subsequent use of and impact on the harbour, affect different groups, and can help students gain an understanding of how values and perspectives can differ.

Watch the Living Waters episode: [January: Recreation](#). Discuss how the Porirua Harbour is a resource for people to enjoy.

- Brainstorm with the class the different recreational activities that the Porirua Harbour and Catchment is used for. What conflicts might they have?
- Brainstorm different rules that might apply to the Harbour and Catchment; for example, rules around speed limits and fishing quotas.
- Brainstorm all the different stakeholders that may be affected by these rules. You may wish to include the plant or animal life of the Harbour and Catchment as one of the groups.

Watch **Living Waters Documentary: December – the future** and the YouTube clip produced by Ngati Toa featuring interviews with kaumatua about the history of the harbour as a resource for the people, and the impact of rules that allowed discharge of toxic contaminants on people's use of the harbour as a resource.

<http://www.ngatitoea.iwi.nz/ngati-toa-kaumatua-interviews-te-awarua-o-porirua-3/>

- Discuss with the class the impact of urban development on the Porirua Harbour and Catchment.
- Brainstorm different rules that might apply to development in the vicinity of the harbour and catchment. For example: Stipulating that sound ecologically based designs are used for housing.
- Brainstorm all the different stakeholders that may be affected by these rules. You may wish to include the plant or animal life of the harbour and catchment as one of the groups.

Choose a rule or category of rules to analyse, for example you may choose the rules for preventing run-off of silt from construction sites.

In groups, ask students to complete a PCQ (Pros, Cons, Questions) with an extra column on the righthand side for values, for one of the stakeholders affected by this rule (see example below). Ensure that each group is analysing a different stakeholder. You may want to do this as a Hot Potato activity where the students pass the sheets of paper around to different groups and add their ideas to each sheet.

An example PCQ chart for developers on the urban development run-off regulations

Pros	Cons	Questions	Values
The environment will be nicer for the home owners living there	Takes longer to complete build as extra tasks to carry out to prevent run off	Do developers care about environmental issues?	Efficiency vs. environmentalism
Less pollution is better for the companies reputation	Incur increased costs	Who should pay for the extra costs?	Making a profit

As a class, discuss how the same rule could be a pro for one stakeholder, but a con to another. Ask students why this could be and explain that this shows they have a different perspective. These differing perspectives show us what different groups values are. Repeat this activity for another rule or category of rules to help students consolidate this understanding for example rules around the control of discharge into stormwater.

- Using the PCQ charts, brainstorm what they think the values of each group might be.

- Discuss how several groups may share values, but for different reasons. For example, developers may value sustainability to ensure their business continues to thrive, the local iwi may value sustainability to maintain a vital food source.
- Decide on the values that the class thinks should be considered when rules are made about the harbour and catchment.

Activity 7: Using rules to solve problems

As a class, discuss that rules are designed to prevent or solve problems.

- Ask students for examples of problems in their class or school that have been solved by a new rule. Then ask students why they think the rule they discussed in the previous section was put in place and what problem the rule addresses.
- Conduct a class debate in which the students' role-play being members of a particular group (for example recreational fishers, property developers or local iwi) discussing a rule change, such as limiting the density of houses in new urban developments near the harbour.
- Ask students in groups to note down the perspectives of their group and the reasons they will give for their opinion. Choose one person who will be their spokesperson for the debate.

Activity 8: Using rules to solve problems

As a class decide on a problem that is affecting a resource within the harbour and catchment. Use the **POOChI** model below to find a way to solve this problem by changing an existing rule or creating a new one.

1. Identify the **Problem**
2. Generate **Options** (new or adapted rule) to solve the problem
3. Predict **Outcomes** for each option – analysing both short- and long-term positive and negative outcomes.
4. **Choose** the best option
5. **I –** What do I think about this? How does this affect me?

Ask students to consider who is responsible for making new rules, who will be affected by changes to the rules and in what way?

Activity 9: Student POOChI activity

Using the same process, students can now analyse the perspectives and values of the groups that would be affected by rule changes to the resource they chose in Activity 4.

Students can then research their chosen resource to decide on a problem they would like to address. Once they have found a problem, they use the POOChI model to generate the best solution. Encourage the students to consider the outcomes for various groups before they choose their solution.

So what, now what?

Activity 10: Our rules to protect the harbour

Students can now try to implement the rule change, or influence decision makers to do so. They may want to:

- Create a petition
- Write letters to the government or councils
- Create an awareness campaign in the community
- Or come up with some other way to convey their idea

TKI action planner

Activity 11: Reflection, presentation & celebration

Ask students to discuss in pairs and then feedback to the class:
what does this mean to me?

Have students feedback findings from their social action:

- Invite guests to see presentations
- Slide show at assembly