

Activity 10: The future of marine reserves



Let's see how
we can apply our
learning to help create
a positive future for
our oceans.



CURRICULUM LINKS

Learning areas

Science: Levels 1–4:

- Nature of Science: Investigating in Science, Participating and contributing

Science capabilities: Use evidence, Critique evidence, Interpret representations, Engage with science

Social Sciences: Social studies

English: Levels 3 and 4: Speaking, Writing, and Presenting; Listening, Reading, and Viewing

Learning intention

Students are learning to:

- Understand the consequences and outcomes of marine issues, now and in the future.

Success criteria

Students can:

- Describe the current situation for an issue in their marine environment
- Record ideas about possible futures for their local marine environment and the consequences of those possible futures.

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BACKGROUND NOTES

THE FUTURE OF OUR OCEANS AND MARINE RESERVES

The oceans are facing many challenges and an uncertain future. Oceans regulate the climate, exchange heat and provide natural services that are essential to life on Earth. Climate change, overfishing, sedimentation and pollution are threatening the health of oceans. Marine reserves can protect habitats and species at all levels of an ecosystem: conserving biodiversity, increasing populations and restoring environments. No-take marine reserves are one of the major parts of marine conservation, but they are not enough on their own to balance all the changes our oceans are experiencing. A range of protection and conservation measures will be needed in future to preserve the health of marine ecosystems.

A FUTURE FOCUS

The future focus principle involves students thinking about the future to predict what could happen and how this might affect them and their community. They can think about different possible futures, both positive and negative. Thinking about the range of possible futures can give insight into how decisions and actions in the present can shape future consequences.

Approaching learning with a future focus/futures thinking is about teaching with three things in mind:

1. How things might be in the future
2. How we might learn and teach in the future (how might schools look in the future?)
3. What life might be like for students in their future lives, and helping to prepare them for future challenges and issues.



Snorkelling in Poor Knights Marine Reserve.
Photo: Lorna Doogan (EMR).

WHAT IS KAITIAKITANGA?

Kaitiakitanga, loosely translated as protection or guardianship, is a way of thinking about and looking after the environment in order to help maintain the balance of everything within it.

In Te Ao Māori, humans have a responsibility to keep the physical and spiritual balance of the environment intact. Traditional ways of managing hunting and fishing were able to ensure enough resources were handed down to the next generation to maintain the mana and mauri of ancestral land.



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Kaitiaki


Kaitiaki are tangata whenua who have been given responsibility through ancestral connections to protect and look after an area's resources. They work with the living and non-living aspects of the environment to act as kaitiaki or protectors/guardians. Kaitiaki help to restore ecosystems through a holistic approach, recognising that all things are interconnected. They look after the environment in order to help maintain the balance of everything within it, using their unique cultural, historical, spiritual and traditional knowledge and skills.

Becoming a kaitiaki is process that is handed down and managed through iwi members and kaumatua. This varies according to region and tribal customs.

LOOKING TO THE FUTURE WITH HOPE, NOT HORROR

At primary level, it is helpful to keep a hopeful tone when teaching/learning about possible futures. Although it is important that we recognise the likely possibility of a challenging future, we can keep the focus on the positive possibilities for the marine environment. There is plenty to be hopeful about, and many individuals and groups are doing inspiring work that is contributing to healthy future oceans. For more information, see (03:24 min)  <http://nzcurriculum.tki.org.nz/Curriculum-stories/Media-gallery/Future-focus/Why-future-focus#collapsible2>.

ECOSYSTEM-BASED MANAGEMENT

In the future, we will need many tools to preserve the health of the marine environment. Marine protected areas will be an important aspect of marine conservation, but as the population increases and there are more demands and impacts on oceans, other forms of ocean protection will be vital. Marine spatial plans are a way for the public and groups in the community to manage the use of the marine environment and its resources, balancing human needs with ecosystem health. For more information on marine spatial plans, see UNESCO's guide *Marine spatial planning: A step-by-step approach toward ecosystem-based management*:  <http://unesdoc.unesco.org/images/0018/001865/186559e.pdf>.



LEARNING EXPERIENCE 10: THE FUTURE OF MARINE RESERVES

Resources for this activity

- *Land-River-Sea*, film by Kura o Matihetihe from the Outlook for Someday film challenge:
▶ theoutlookforsomeday.net/films/2011/080.
- 'Tiakina a Tangaroa – Protect our seas', *School Journal*, level 2, October 2011 🔗 <http://instructionalseries.tki.org.nz/Instructional-Series/School-Journal/School-Journal-Level-2-October-2011/Tiakina-a-Tangaroa>
- Gulf Journal poster: 'The Gulf Recovers':
🔗 <http://gulffjournal.org.nz/poster/the-gulf-recovers>.
- Student worksheet *Future consequences of an issue for our marine environment* (🔗 page 9).



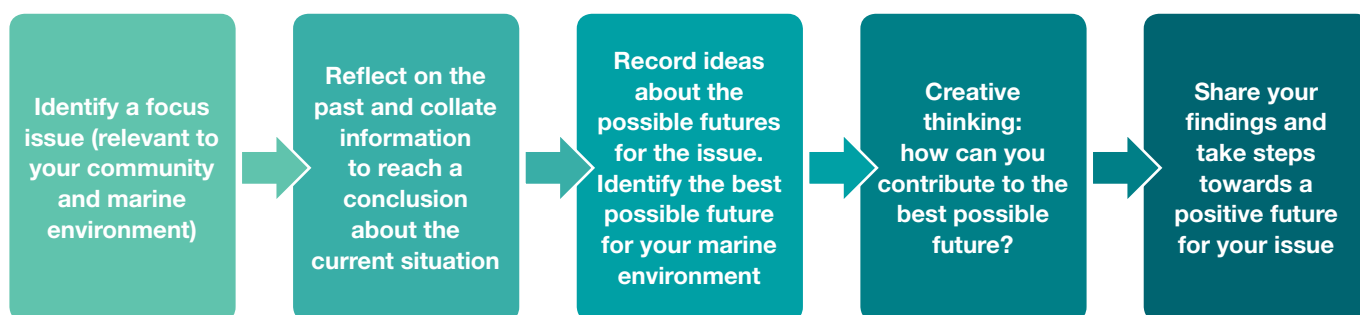
Focus question:
How can we apply our learning to help create a positive future for our oceans?

Vocabulary

Future, focus, predict, consequences, kaitiakitanga, kaitiaki.

CONSIDERING THE MARINE ENVIRONMENT NOW AND IN THE FUTURE

Sequence for thinking about the future of a focus issue for the marine environment



Inquiry stage 4: Extending thinking



Revising your main focus issue (for your local environment)

- Reflect on your inquiry and research. What has happened in the past in your local marine environment? Which issue is of the most concern to students? (See 🔗 *Activity 7: Issues for marine environments*.)
- Ensure that this focus issue is relevant to your community. Discuss this issue and its impact on the community and environment. Record ideas.



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WORKING WITH TANGATA WHENUA IN YOUR AREA



Kaitiakitanga

- Watch the Outlook for Someday film, *Land-River-Sea*, by Kura o Matihetihe (see *Resources* above).
- After viewing, discuss the meaning of kaitiaki. What does it mean to look after your gifts? (For example, to look after your resources, such as kaimoana. See *Background notes*.)
- Kaitiakitanga is a way of thinking about and looking after the environment in order to help maintain the balance of everything within it. It is about looking after the environment and taonga for future generations and keeping everything healthy and balanced. This idea relies on a future focus to support future generations to come.

Supporting kaitiaki

Students can support kaitiaki in their roles and work alongside iwi. Ask whānau and iwi affiliated to your school about how they are involved in the marine environment/marine protection. Is there an opportunity to support their efforts? Or contact your local council to find out about iwi responsible for kaitiakitanga in your area (rohe). See  www.maorimaps.com as a starting point.



Tāwharanui Marine Reserve opening, 2011.
Photo: Michelle Jenkinson

Inquiry stage 5: Coming to conclusions




- Students can take the opportunity at this point to reflect on the overall findings from the inquiry so far. Are any patterns or trends emerging from the evidence and data you have gathered? This may involve sharing information with each other.
- Sum up your local context: What is the current situation for marine protection in your local area? What conclusions could you come to as a result of your findings?

INTRODUCING A FUTURE FOCUS

Explain that a future focus means thinking about:

1. How things might be in the future. (What are students' predictions for major changes in the future? These could be around technology, lifestyle, transport or values.)
2. How we might learn and teach in the future. (How would schools look in the future?)
3. What life might be like for students in the future.

(See  <http://nzcurriculum.tki.org.nz/Principles/Future-focus>.)



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Thinking about the future of your marine environment

- Thinking about the future involves using our imaginations and wondering what life could be like as time goes on.
- Ask students to share their ideas with a buddy about what they think could be the state of the oceans/marine environment when they are adults (in 10–15 years).
- Students can view the poster from the *Gulf Journal* series: ‘The Gulf Recovers’: gulfjournal.org.nz/poster/the-gulf-recovers. This poster shows one possible very positive future for the Hauraki Gulf/Tikapa Moana, in Auckland. Do students think that this might be a realistic view of the future?
- What could your local marine environment possibly be like in the future? How would your main focus issue look at that stage? What is the best-case scenario (best possible future)?
- Students can record their ideas about possible futures and consequences on the worksheet: *Future consequences of an issue* (📄 page 9). Record possible futures that could happen and their short-term consequences, starting with the issue getting worse then thinking about what could happen if the issue got better.
- When considering long-term consequences, think about: If the short-term consequences happened, then what could possibly happen as a result, a few years after that?
- Which future do they believe is the most likely to occur and why? What unpredictable factors could alter the future (e.g. climate change, natural disasters, new inventions, and so on)?

Marine reserves and the future

- Marine reserves and protected areas are important for maintaining the health of the ocean and are becoming more important as time goes on.
- Share ideas about how marine reserves might be important to the future health of your marine environment.
- What other forms of future marine protection are possible for your community?

Inquiry stage 6: Sharing our findings



- Share students’ findings from their inquiries and their thoughts about tackling a local issue for the marine environment and local community. This could be through a presentation, assembly item, hui, blog or newsletter item.
- Alternatively, you could share your findings through an online tool, for example: <https://tellagami.com>, <http://blabberize.com>, <http://www.wordclouds.com>, <http://voicethread.com> or <http://popplet.com>.
- Visit locals who are also involved with this issue. See if you can collaborate with them to address the issue.

Note: This inquiry stage of sharing can be completed at a different point in the inquiry, if that is more appropriate for your students. This stage could also feature more than once in your learning journey.




REFLECTING ON LEARNING







Focussing on the hope – what is the best possible future you can help to create?

- Now draw students' attention to their ideas about the 'best possible future' and discuss how that future might be brought into existence. What could individual students, their families and the wider community, do to ensure the best possible future happens?







In the next activity we will look at possible direct actions that could contribute to a positive future (see  *Activity 11: Action for marine environments*).

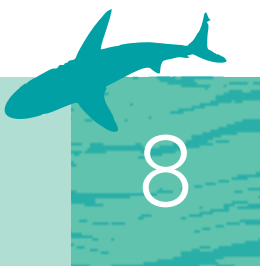
EXTENDING LEARNING



- If students have been investigating a particular species, how might this species be affected by the focus issue? How can your students contribute to a positive future for this species?
- Explore the possible futures of coast around the world at  <http://futurecoast.org>. The site hosts fictional audio 'chronofacts' about possible future scenarios.
- Find out about ecosystem-based management of our marine environment, with resources from Science Learning Hub and Sustainable Seas Challenge:  www.sciencelearn.org.nz/resources/2506-looking-at-ecosystem-based-management-ebm. EBM (ecosystem-based management) addresses the different stakeholders and interests in the wider marine environment and discusses how we can maintain the health of the ocean while meeting the needs of the community into the future. See also:  <http://sustainableseaschallenge.co.nz/challenge>.
- Take futures thinking further with 'Future problem solving' a competitive programme for students at:  <http://fpsnz.co.nz>.
- For an example of how the community has collaborated to develop a marine spatial plan for the Hauraki Gulf/Tikapa Moana, see:  <http://www.seachange.org.nz>. Mana whenua, central and local government, local communities and interest groups have all contributed to this plan.

OTHER RESOURCES ABOUT THE FUTURE FOCUS PRINCIPLE/ FUTURES THINKING

- Science Learning Hub's futures thinking toolkit:
 <https://www.sciencelearn.org.nz/resources/2439-futures-thinking-toolkit>.
- National Director of Future Problem Solving, Robyn Boswell, speaks about the importance of the future focus principle:  <http://nzcurriculum.tki.org.nz/Curriculum-stories/Media-gallery/Future-focus/Why-future-focus>.
- Presentation about possible futures of our oceans by Smithsonian (11:30 min):
 <https://www.smithsonianmag.com/videos/category/innovation/the-future-of-oceans>.
- Sustainable Seas Challenge:  <http://sustainableseaschallenge.co.nz>.
- Resources by Science Learning Hub to extend thinking about the sustainable seas challenge:
 -  www.sciencelearn.org.nz/resources/2512-sustainable-seas-national-science-challenge
 -  www.sciencelearn.org.nz/resources/2505-environmental-thinking-and-planning-with-ecosystem-based-management-ebm.







The issue:

Current situation

What has caused the current situation?

Describe the possible futures for this issue:	Short-term consequences	Long-term consequences
The issue gets worse:		
The issue stays the same:		



Describe the possible futures for this issue:	Short-term consequences	Long-term consequences
The issue gets better:		
Best possible future:		
What other factors could influence the future?		