

Oil Spill Disaster Teacher Resource outline – Primary level (+ Secondary)

Learning stage	Activities	Resources	Curriculum link
<p>1. Identify the current situation What do we know now?</p>	<p>The Beach Environment Historical and cultural stories about the area Māori connection with the sea</p>	<p>Life's a Beach Teaching Resource http://www.library.tauranga.govt.nz/local-history/maori/stories-of-tauranga-moana.aspx http://www.teara.govt.nz/en/marine-conservation/1</p>	<p>English, Social Studies, Science Social Studies, Māori, History</p>
<p>2. Identify the current situation What can we learn?</p>	<p>The Dune Community Dunes – Form + Function Coastal Dunes The Rocky Shore Coastal Wetlands Water cycle game</p>	<p>Life's a Beach Teaching Resource www.seaweek.org.nz http://response.restoration.noaa.gov/index.php - Click on Students and Teachers</p>	<p>Science, Social Studies Science Science</p>
<p>3. Identify the current situation What can we observe? How did it get to be this way?</p>	<p>Bay of Plenty oil spill disaster For up-to-date information about the latest situation (and to see past media releases) Plot on graph - No. of containers found/lost/still on board - No. of wildlife in care For the latest Health updates visit : Local iwi connection to the sea - Food source Oil pollution info from Northland Regional Council Experiment – oil doesn't mix with water Liquid density and oil spills</p>	<p>Bay of Plenty Regional Council website http://www.boprc.govt.nz/home.aspx <ul style="list-style-type: none"> • www.maritimenz.govt.nz or www.facebook.com/boprc or the BOPRC twitter account and link to these messages or retweet them to your contacts. • http://renaoilspill.co.nz http://www.toiteorapublichealth.govt.nz/rena_oil_spill http://www.sunlive.co.nz/news/17185-rena-iwi-place-ban-on-fishing.html http://www.nrc.govt.nz/For-Schools/School-information-packs/Oil-Pollution/ http://www.education.com/activity/article/Learn_About_Oil_Spills/ http://www.nationalgeographic.com/xpeditions/lessons/14/g68/trythis_oil.html http://www.amsa.gov.au/Marine_Environment_Protection/</p>	<p>English, Social Studies, Technology Social Studies, maths Health Māori, Health English, Social Studies, Science Science, Chemistry</p>

	<p>Instructional video</p> <p>General</p> <p>World oil spills (general info/activities)</p> <ul style="list-style-type: none"> o Oil and water don't mix (instructions) o Word find o Colour the picture and find the information <p>Try these experiments:</p> <ul style="list-style-type: none"> - Cleaning Oiled Feathers experiment - Coral reefs and oil spills: a guided tour - Making Mousse – shows what happens to oil after it spills on the ocean surface - Oil floats and spreads <p>Cleaning up oil spill</p> <p>Mini unit on oil spill on California coastline</p> <p>Oil consumption</p> <p>Island survival – how does the oil spill effect Māori use of the sea especially kaimoana</p>	<p>Educational_resources_and_information/Teachers/Classroom_Projects/Clean_up_oil_spill_exercise.asp http://octopus.gma.org/surfing/human/savethebay.html http://www.evostc.state.ak.us/facts/experiment.cfm</p> <p>Resources specifically for oil spills (from USA) http://gulfseagrant.tamu.edu/oilspill/teacher-student.htm http://www.nwf.org/~media/PDFs/Kids/oilspill_mini-page.ashx</p> <p>http://response.restoration.noaa.gov/index.php - Click on “Students and teachers”</p> <p>http://www.lawrencehallofscience.org/kidsite/portfolio/oil-spill/</p> <p>http://www.coastal.ca.gov/publiced/oilspills.html</p> <p>http://octopus.gma.org/surfing/human/consumption.html</p> <p>Island survival teacher's guide attached at end of unit plan</p>	<p>Varied</p> <p>Science (for younger students), English, Art</p> <p>Science</p> <p>Science (for younger students)</p> <p>Social Studies, English, Science (Biology), mathematics</p> <p>Mathematics, social studies</p> <p>Māori, Social Studies</p>
<p>4. Explore alternatives</p>	<p>Bird baths: cleaning up wildlife after oil spills</p> <p>Protect our seas educational kit</p>	<p>http://www.nationalgeographic.com/xpeditions/lessons/14/g35/dawnducks.html</p> <p>http://www.amsa.gov.au/Marine_Environment_Protection/Educational_resources_and_information/Teachers/Protect_Our_Seas_Educational_Kit.asp</p>	<p>Geography, science, zoology/biology/ecology</p> <p>Science</p>

	<p>What items were in the containers? - Issues with consumerism The Story of Stuff (do we need all the “stuff” we have in our lives?)</p> <p>Transport – how can Bay of Plenty Regional Council help you</p> <p>Local Iwi response to Rena oil spill</p>	<p>Follow news media reports to find out eg precooked burgers http://www.globalfocus.org.nz/?page=Trade!EducatingAboutTrade http://www.storyofstuff.com/</p> <p>http://www.boprc.govt.nz/sustainable-communities/transport/</p> <p>http://www.scoop.co.nz/stories/CU1110/S00268/maori-wardens-put-aroaha-into-action-on-the-coast.htm http://www.bayofplentytimes.co.nz/news/rahui-placed-around-oil-spill-and-reef/1130743/</p>	<p>Social Studies, Geography, English</p> <p>Health, PE,</p> <p>Māori, English, Social Studies</p>
<p>5. Take Action What can I do - Individual - family/whanau What can we do - school - community</p>	<p>Sustainable transport options - start or revisit walking school bus &/or cycling school bus</p> <p>How to reduce energy consumption in home and school Alternative energy sources to oil</p> <p>Adopt an area to protect Management + Action</p> <p>Make a video to show how we all can help</p>	<p>http://www.walkingschoolbus.co.nz/ Do a big campaign – collect data before and after to see any changes to people’s mode of transport http://www.measuringchange.org.nz/ for ideas on how to collect data</p> <p>http://learn-energy.net/education/lesson_plans.php</p> <p>Energy Resource http://www.boprc.govt.nz/residents/teachers/energy-teacher-resource/</p> <p>http://www.knzb.org.nz/ Life’s a Beach resource</p> <p>http://renaoilspill.co.nz/videos/</p>	<p>Health, PE, English, Social Studies</p> <p>English, Social Studies, Maths, technology</p> <p>Social Science</p> <p>English, Technology, Media, Art/Drama</p>
<p>6. Reflect</p>	<p>How can we monitor and record the changes Sharing with others</p>	<p>Make a map of the oil spill and record progress</p> <p>Present to your local community about transport mode options and the changes occurring in your school – explain why your school did this campaign</p>	<p>Social Studies, Geography, Mathematics English</p>

Secondary Level (+ any of the above)

Learning Stage	Activities	Resources	Curriculum
<p>1. Identify the current situation What can we learn?</p>	<p>Live Monitoring Bay of Plenty Regional Council monitors rivers, lakes, tidal, rainfall, meteorological and air quality sites throughout the Bay of Plenty. The majority of these sites are telemetered i.e. the data from them is transmitted back to base via the radio or phone network. this maybe useful for older students to see how the Council is always checking the status of the water</p>	<p>http://old.boprc.govt.nz/MonitoredSites/cgi-bin/hydwebserver.cgi/catchments/details?catchment=23</p>	<p>Science, Mathematics (statistics), Geography</p>
<p>Identify the current situation What can we observe? How did it get to be this way?</p>	<p>Follow the court case against the captain Follow the updates on who is liable for the disaster</p> <p>Try these experiments: - Graphing changes in marine life abundance - Investigating the top of the water column - Oil trajectory prediction - Sediment penetration - What's the story on oil spills?</p> <p>experiment demonstrating oil bioremediation</p> <p>Conversion factors for oil spills</p>	<p>Any media source</p> <p>http://response.restoration.noaa.gov/index.php - Students + teachers</p> <p>http://www.amsa.gov.au/Marine_Environment_Protection/Educational_resources_and_information/Teachers/Classroom_Projects/Bioremediation_exercise.asp</p> <p>http://www.amsa.gov.au/Marine_Environment_Protection/Educational_resources_and_information/Teachers/Classroom_Projects/Mathematics_and_Oil_Spills.asp</p>	<p>Social Studies, Economics</p> <p>Science (Biology, Chemistry, Ecology), Geography, English</p> <p>Science</p> <p>Mathematics</p>
<p>Explore alternatives</p>	<p>Hindsight and foresight: 20 years after the Exxon Valdez spill</p> <p>Plan + execute an appropriate warning + clean-up response</p> <p>Hypothetical on 3 levels of Government involved in oil spill response</p>	<p>http://response.restoration.noaa.gov/index.php</p> <p>http://www.cencoos.org/documents/classroom/CENCOOS_CSM2_Teacher.pdf</p> <p>http://www.amsa.gov.au/Marine_Environment_Protection/Educational_resources_and_information/Teachers/Classroom_Projects/Government_jurisdiction_exercise.asp</p>	<p>English, Social Studies, History, Geography</p> <p>Physics, mathematics</p> <p>English, Social Studies, Geography</p>

	World without oil simulation to engage students with questions about energy use, sustainability, the role energy plays in our economy, culture, worldview and history, and many others.	http://www.worldwithoutoil.org/metateachers.htm	Economics, Social Studies, Geography, English
Inquiry learning ideas	<p>Inquiry learning – deep sea drilling proposals in NZ</p> <p>Inquiry learning – commercial shipping global issues – ship breaking yards/ship dismantling – human and environmental costs (compare to a Navy ship being made into a reef)</p> <p>Deregulation of NZ coastal shipping</p> <ul style="list-style-type: none"> - Allows for cheap foreign labour crews – underpaid + over worked + little or no English <p>Oil Spills – what happens to the collected oil and the non-collected oil</p>	<p>http://www.greenpeace.org/new-zealand/en/campaigns/climate-change/Oil-drilling-not-a-solution/Oil-Action-Pack/</p> <p>http://www.radionz.co.nz/national/programmes/deas/20101003</p> <p>http://www.shipbreakingbd.info/EnglishSite.php</p> <p>Read “letter to the editor” The Daily Post 18/10/2011</p> <p>Follow media reports about the arrest of the captain – who is to blame for this maritime disaster? Study about the owner of the ship – what are their employment regulations?</p>	Social studies, geography, English

Possible Extension ideas

- Consumerism
 - o Compare a New Zealand teenager with a girl in India <https://www.worldvision.org.nz/Catalogue/Education/Search/?&f1=32&f2=&f3=>

Island Survival

Summary

In this activity, students will participate in a simulation of life on a deserted island. They will be challenged to use their critical thinking skills and knowledge of oceans and islands to “survive” and ultimately return to safety.

Objectives

At the conclusion of the lesson, students will be able to:

- understand options for meeting basic human needs and develop a plan for meeting such needs
- work cooperatively with classmates to solve real-world problems relating to survival

Time: 3–5 periods

Background

This activity consists of a simulation of survival on a deserted island. Students will have some time before their trip to prepare and plan, but will have to rely on their wits and what they have learned previously about oceans and islands to survive various hardships and ultimately to escape from the island.

It is important that you teach some basic survival facts, such as the role of water, shelter, warmth, and food in increasing a person’s chances for survival. For example, there is no substitute for fresh water; people can survive only days or even less without it. It is also important to note that drinking ocean water will only hasten illness because the salt in ocean water increases dehydration.

Shelter and warmth are also key for survival. Prolonged exposure to sun, rain, or cold can lead to a person developing either hypothermia (a condition that stems from the body becoming too cold) or hyperthermia (a condition that stems from the body becoming too hot), both of which can cause severe illness or even death. Note that the risk of hypothermia is present even in tropical climates as it can occur *any time* a person’s body temperature is less than 98.6 degrees (its normal temperature) for an extended period of time.

Food is another key element in survival, as it directly relates to a person’s state of health and energy. Without health or energy, it is near impossible for a person to survive in an extreme situation and, ultimately, to escape.

Teacher's Notes

This activity requires some advance preparation. To begin with, you will need to acquire a map of a small island, then draw in divisions, making five sectors (north, south, east, west, center). You can use a map of Eleuthera or another actual or imaginary island, absent any towns or other manmade objects.

It is also necessary to create a set of "challenge" cards in advance. Some content suggestions are provided, but feel free to add to or subtract from the list. In the actual simulation, have each student group select challenge cards from a box, then replace the cards after reading them, so that there need be only one set of challenge cards for the entire class.

In planning for the simulation, you may want to incorporate this lesson into a thematic unit on survival using popular children’s literature, such as *Swiss Family Robinson*, *The Cay*, *Island of the Blue Dolphins*, or *Robinson Crusoe* (see Activity 10 in this guide). Also consider showing clips from the movie *Cast Away*, in which the character played by Tom Hanks is marooned on a deserted island and uses a variety of common items in clever ways in order to survive.

You may wish to end the game after the first student group has escaped from the island. Alternately, consider setting a specific time limit (e.g., 2 class periods) for the simulation. If you wish to allow all student groups to escape, have those groups that escape early either split up and join the remaining groups or complete a writing assignment related to the activity, such as the one described in the Extend the Experience section.

Elementary: To simplify the game for younger students, or if time is tight: (1) have the entire class work as one group, encouraging all suggestions, voting on a strategy each turn, and keeping score on an overhead transparency; (2) allow students to keep any escape challenge cards that they receive to use them on later turns; (3) add more beneficial challenge cards and remove some of the negative ones; (4) do not require students to choose a site for their shelter and remove any shelter location related cards; and/or (5) combine some resource categories, such as food and water or shelter and warmth.

Middle School and High School: Students should be able to complete the activity without major difficulty. If one of the emphases of the class is history, consider having students select items and develop survival strategies that would apply to a specific time period.

Vocabulary

Dehydration, hyperthermia, hypothermia

Materials

Island map divided into 5 sectors, *Island Survival Worksheet* ([provided](#)), "challenge" cards ([suggestions provided](#)), box for challenge cards, box for names of items to bring to the island, small slips of paper, journal writing materials, pens or pencils

Procedure

Part I: Preparation

1. Begin by asking students to consider what they would need to survive if marooned on a deserted island. They should consider items in each of the basic categories of survival: water, food, shelter, warmth, and good health. Ask students how they might ultimately be able to safely return to "civilization." Some possible answers might include waiting to be rescued, making a raft, or signalling a passing plane or ship.
2. Inform students that they will be participating in a simulation of island survival. Have students work in groups to develop a list of five things that they would bring to an uninhabited subtropical island to help them survive for up to one year. All items must fit in a single, zipped-up, medium-sized backpack. Students are not permitted to bring any type of firearm or telecommunications device that would allow them to communicate with the outside world. However, each student will be allowed to bring a journal and a pen or pencil as well as the clothes that they are wearing that day (these are not counted among the five items).
3. Have each student group write each item from their final list on an individual slip of paper, then place the paper slips in the class "item" box. If possible, add a few extra slips of paper to the box, listing common items whose use on an island may be unclear (e.g., umbrella, hand mirror, soccer ball, rubber bands, paper clips, string, cassette tape, etc.).
4. At the end of class or as homework, assign each student to write a journal entry describing the items that their group selected and explaining why they chose them.

Part II: Planning

5. Have each student group select two items from their original list, then pick three items from the item box without looking. These are the items that they will bring with them to the island.
6. Provide each student group with a copy of the island map (see Teacher's Notes for map details). With the map and their list of items, have students work with their group to develop an island survival plan. What will they do first? What will they eat and drink? Where will they sleep? How will they protect themselves? How could they eventually escape from the island? Have each student summarize their group's plan in a

journal entry.

Part III: Island Survival Simulation

7. Begin the simulation. In this final phase of the activity, students will implement their plans. Start by handing out a copy of the *Island Survival Worksheet* to each student. Then, read the worksheet's Survival Scenario aloud, making sure that students understand the rules and ultimate goal of the exercise.
8. Next, have students record their initial resource points in the first blank horizontal row of their worksheet Resource Tracking Charts. These points are based on the five items that each group "brought" to the island with them. All groups begin with at least five health points (five points plus any additional health points for medicine, a first aid kit, etc.). In addition, here are recommended point values for some of the most likely initial items:

Initial Items	Resource Points
Each food item	+1 food
Fishing rod or other device to catch/find food	+3 food
Packet of crop seeds	+3 food in Round 3
Each water/drink container	+1 water
Each tool useful in constructing a shelter	+2 shelter
Each blanket or piece of extra clothing	+1 warmth
Matches or sleeping bag	+2 warmth
Tent	+2 warmth, +2 shelter
Bottle of vitamins or medicine	+1 health
First aid kit	+3 health

Binoculars	+1 escape
Mirror	+1 escape (daytime only)
Survival manual	+1 for each resource

Note: Allow students to attempt to justify additional resource points for their initial resources. Be judicious in awarding extra points, but accept reasonable arguments.

9. In the third step of the simulation, have each group choose between two initial exploration strategies: (1) quick search or (2) thorough search. If a group initially chooses to do a quick search, it may do a thorough search on a later turn. However, once it has done a thorough search, a group cannot do a quick search later on. Have each group commit to a strategy before reading them the point results of their chosen strategy (see the provided strategy table for point allocations).
10. Have students record their strategy choice in their journal, then place their resource additions or losses in the upper left corner of the appropriate square in the second row of their Resource Tracking Charts. When done, have students record their cumulative scores for each category in the centre of the square by adding their exploration results to their initial resources. For example, if their initial resources were +1 water and they chose to do a thorough search, they would now have +6 for water resources.
11. Have each group select one of the five sectors on the island to set up a camp. They should mark this location on their map with an X. They should also specify whether they are camping on the beach or inland. When they eventually build a shelter, they also need to specify its location. Once built, the shelter will remain at this location unless they adopt a strategy to move it elsewhere.
12. From here on, the simulation proceeds for each group in a series of rounds. Each round represents one month of "island time." In each round, a group should first choose a "challenge" card from the challenge box without looking. The card may result in the loss or gain of resources, or in an opportunity to escape. Each student group should then adopt a single strategy, which may also result in the loss or gain of resources or in an actual escape. As the teacher, you will have to decide how many resource points to reward or remove for a particular strategy. Some common strategies and recommended point gains/losses are as follows:

Strategy	Resource Points (gains and losses)
Explore island quickly	+1 water, +1 shelter, +1 food (first turn only)
Explore island thoroughly	+5 water (spring found), +3 food, +3 shelter, -1 health (can do only once, on first or second turn)
Build a reed or stick shelter	+2 shelter (must specify where shelter is located)
Build a log or stone shelter	+3 shelter (must specify where shelter is located)

Build a water barrel	+2 water (if rains in future round)
Search for wild vegetables or fruit	+2 food (one time only for each)
Search for water	+3 water (one time only)
Search for lumber/coconut trees	+2 food, +1 water, +2 shelter (one time only)
Maintain a fire at night	-1 shelter, +2 escape (night only), +1 warmth
Make a rod or net to catch fish	+3 food
Make a spear to catch fish	+2 food
Move a shelter to another area of the island	no change in points
Build a raft or boat	-3 shelter, + 3 escape (water only)
Float on a log	+1 escape
Use a mirror to reflect sunlight	+1 escape (day only)
Make a message on the beach with rocks	+1 escape (day only)
Signal using a flashlight	+1 escape (night only)
Send up a flare	+2 escape
Use binoculars	+1 escape

Maintain a lookout	+2 escape
Toss a bottle with a note in it into the ocean	+2 escape, two rounds later

Have students record each point change in the upper left of the appropriate square on their Resource Tracking Charts before adding up their cumulative points in the centre of the square. Also, **be sure to have each group subtract one point for food and one point for water in each round.**

13. Groups should proceed independently, and use the time in between rounds to discuss potential future strategies and record the results of their previous strategies in their Resource Tracking Charts and journals. This cycle of rounds repeats until the groups escape, lose, or class time runs out. Note: If students participate in more than five rounds, have them continue their Resource Tracking Charts on the back of their worksheets.
14. Have students write a final journal entry summarizing their experiences and what they have learned.

Extend the Experience

Pose the following question: You are able to bring one small item from the island back home with you as a reminder of your time there. It may be something that you brought in your backpack, something that you made on the island, or an object that you just picked up on the island. Explain which item you will bring home and why.