



Grade
5-7

Building Sustainability

Get ready for your expedition to Planet Sustainability in outer space! In this lesson, students are encouraged to explore the Vancouver Aquarium as a facility that models innovation and sustainable practices. Students will begin to think about what it means to be sustainable, explore ways that the Aquarium demonstrates sustainable practices, and consider ways to incorporate similar practices into their everyday lives.

- S**tudents will be able to:
- [1]** describe what it means to be sustainable
 - [2]** discuss various ways that the Vancouver Aquarium demonstrates sustainable practices
 - [3]** identify ways to reduce waste and energy use in their everyday lives

LEARNING ENVIRONMENT	Steps
<ul style="list-style-type: none"> • Various locations at the Vancouver Aquarium • Small group work 	<p><i>This activity works best as a review of scientific concepts explored in class prior to a Vancouver Aquarium visit. Students should be familiar with the concepts of sustainability, waste production, energy use, renewable and non-renewable resources, and how human actions can impact the environment. Please see the section, 'Helpful Information' for details of pre-teaching material.</i></p>
MATERIALS	
<ul style="list-style-type: none"> • Activity sheet and map (included here) • Pencil and eraser • Clipboard or binder 	<p>1) Preparing for take-off (15-20 min). Scenario: You are getting ready to travel through space to meet with the government of Planet Sustainability. There are no garbage trucks in space, and your spaceship will have a limited energy source (there aren't gas stations or power stations in space). What are some things that you and your team can do to minimize your waste production and energy use, so you can ensure that you arrive safely and happily at Planet Sustainability? In your teams (groups of 3 or 4), come up with an essential agreement that outlines the things you will do during your flight to minimize waste production and energy use. Write your ideas down on the "Essential Agreement" recording sheet below.</p> <p>2) Finding evidence (30 min). Scenario: Your mission is to help the</p>

Vancouver Aquarium prove to the alien government of Planet Sustainability that they are helping to save the world, before the aliens decide to destroy it. As you explore the Aquarium in your teams, search for examples that would provide evidence that the Vancouver Aquarium has sustainable practices, and that the facility is eco-friendly. Sketch and label any examples you find in the data-sheet below. Keep an eye out for silver plaques (marked as red stars on the map provided) that will guide you on your expedition. The plaque in each section of the Aquarium will give you some clues and information that will help you with finding examples to sketch in your data-sheet. **TIP:** To avoid too many students trying to look at one section at the same time, have different groups start at different geographic locations within the Aquarium. Provide students with clipboards so they have a hard surface on which to draw and write.

3) Return to home base (15-20 min). Meet up with the rest of the class at a pre-arranged meeting spot to compare your data and discuss your findings. Look at all of the evidence that you've collected to show the Plant Sustainability government that the Aquarium is a sustainable facility. As a class, come up with at least 5 ways that you could make your homes or school more sustainable, and record these on the other side of your data-sheet. Do you think that you can accomplish all of these things?

Helpful Information

Aquarium Meeting Spot: The Vancouver Aquarium can be a busy place so locating a pre-arranged meeting space for your class is essential to reinforce learning during your visit. Some spots to consider include the Underwater Dolphin and Arctic Galleries, the Exploration Gallery, and outdoors, weather permitting.

Teacher Background Information: The silver plaques located around the Aquarium provide some guiding information for students during the exploration process (please see the attached map for specific locations of each plaque). Students should look for examples of objects or devices in the vicinity of each plaque that help to explain how the Aquarium is sustainable in their practices. *Some examples include:* toilets that flush using rainwater help to conserve water; drought-resistant native plants save water since they don't need to be watered; pipes that pump cold ocean water into the Aquarium help to keep the building cool without needing energy for air-conditioning; special pipes pull warm air from the kitchens to the rest of the Aquarium to warm other areas without needing energy for heaters; compost and recycling bins help to reduce waste production.

Extension Activities

Conduct an interview:

Have students choose one of the plaques that are of particular interest to them, come up with a list of questions that will help them to find out more about it, and use the questions to interview an Aquarium employee (people in the **red** Aquarium shirts)

Write a letter:

Students will use the evidence that they gathered to write a letter to the government of Planet Sustainability. The letter should summarize the reasons why the Vancouver Aquarium should not be destroyed, since they are helping to save the world by having an eco-friendly facility that uses sustainable practices.

British Columbia - Prescribed Learning Outcomes

Grade 5

Science – Big Idea: Humans use earth materials as natural resources

Science – Curricular Competency: Choose appropriate data to collect to answer their questions (planning and conducting)

Science – Content: the nature of sustainable practices around BC's living and non-living resources

Grade 6

Science – Curricular Competency: Choose appropriate data to collect to answer their questions (Planning and Conducting)

Science – Curricular Competency: Experience and interpret the local environment (Processing and Analyzing Data and Information)

Science – Curricular Competency: Transfer and apply learning to new situations (Applying and Innovating)

Grade 7

Science – Curricular Competency: Transfer and apply learning to new situations (Applying and Innovating)

Science – Curricular Competency: Contribute to care for self, others, community, and world through personal or collaborative approaches (Applying and Innovating)

Science – Content: evidence of climate change over geological time and the recent impacts of humans

Essential Agreement and Taking Action

Team Members:

- _____
- _____
- _____
- _____

In order to minimize waste production and energy use, we all agree to:

- ✓ _____
- ✓ _____
- ✓ _____
- ✓ _____
- ✓ _____
- ✓ _____

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Please complete this section as a class at the end of your exploration.

Some ways to make our homes and school more sustainable:

- ✓ \_\_\_\_\_
- ✓ \_\_\_\_\_
- ✓ \_\_\_\_\_
- ✓ \_\_\_\_\_
- ✓ \_\_\_\_\_

**Data Sheet**

**Water Conservation**

Sketch and describe an example of a device/object that aids in water conservation:

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Sketch and describe an example of a device/object that aids in water conservation:

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**Energy Reduction**

Sketch and describe an example of a device/object that aids in energy reduction:

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**Waste Reduction**

Sketch and describe an example of a device/object that aids in waste reduction:

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## Scenario

### Prepare for take-off!

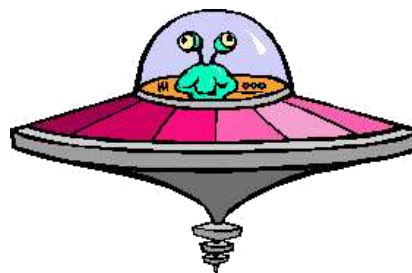
You are getting ready to travel through space to meet with the government of Planet Sustainability. There are no garbage trucks in space, and your spaceship will have a limited energy source (there aren't gas stations or power stations in space). What are some things that you and your team can do to minimize your waste production and energy use, so you can ensure that you arrive safely and happily at Planet Sustainability? In your teams (groups of 3 or 4), come up with an essential agreement that outlines the things you will do during your flight to minimize waste production and energy use. Write your ideas down on the "Essential Agreement" recording sheet below.

### Mission

Your mission is to help the Vancouver Aquarium prove to the alien government of Planet Sustainability that they are helping to save the world, before the aliens decide to destroy it. Explore the Aquarium in your teams, and search for examples that would provide evidence that the Vancouver Aquarium has sustainable practices, and that the facility is eco-friendly. Sketch and label any examples you find in the data-sheet below. Keep an eye out for silver plaques (check out our map!) that will guide you on your expedition. The plaque in each section of the Aquarium will give you some clues and information that will help you with finding examples to sketch in your data-sheet.

### Return to Home Base

Meet up with the rest of the class at your pre-arranged meeting spot (check with your teacher!) to compare your data and discuss your findings. Look at all of the evidence that you've collected to show the Planet Sustainability government that the Aquarium is a sustainable facility. As a class, come up with at least 5 ways that you could make your homes or school more sustainable, and record these on the other side of your data-sheet. Do you think that you can accomplish all of these things?



MS ClipArt

Exploration Map

