

Grade 7 Final Project for Life Science: Ecosystems Supplemented with a visit to the Royal B.C. Museum

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This lesson plan is a guide for teachers looking to supplement their Grade 7 Science unit on habitats and ecosystems with a visit to the Royal B.C. Museum. Students will explore ocean habitats and ecosystems while at the museum and also be introduced to the 7 Principles of Ocean Literacy. These principals can be used to educate your students about the importance of treating the ocean with respect and how their actions can impact the ocean environment. These principals can be found at oceanliteracy.wp2.coexploration.org

This lesson outlines steps to be taken while at the museum to make the most of your visit. How you chose to have your students present their findings is up to you. This project could be used by itself as *summative assessment of learning* or could be used in tandem with a final test on similar subject matter. During your visit to the museum, it is important to provide ample time for students to freely explore the Ocean Station, prior to providing them with the handout. This will encourage students to use the station as a hands-on learning experience before working on something more structured. Before introducing this project, your students should be familiar with:

- What an ecosystem is and what types can be found locally
- What a food chain/food web is and how organisms are placed within them
- How organisms pass energy through a food chain
- Taxonomy (ie the proper naming of species. This can be brief or not required, depending on the detail you would like students to have within their project.)



Scenario:

Students are to pretend that they are Marine Biologists on their first field study mission, to the coast of British Columbia. While exploring, they have stumbled upon an entirely new ocean species - they are now tasked with creating a document outlining a variety of facts about their new creature, which include but is not limited to:

- Name and classification
- Size and weight
- Range where it can be found
- Habitat
- Where in the food chain is this organism placed? (should be related to what students already know about the creature that inspired them, may include more research on the part of the student)
- How it contributes to the ecosystem it is situated in
- Identify factors that are critical for healthy populations and ecosystems, including air and water quality
- Possible effects of habitat loss for their species

Students will be required to research certain species from outside sources to gather this information. These facts should be based within the real world of the species that inspired them (ie if they have found a new type of sea star, they should research other typical habitats, ranges, food chains etc for pre-existing sea stars.) Students will illustrate and take notes on three different specimens in the Ocean Station, which can be used as inspiration for their imaginary sea creature. They should also be encouraged to make connections between species within the station, as many live in similar habitats and may be part of a larger food chain/web.



Classroom Connections:

There are a variety of ways to complete this project with your students once back in the classroom. Depending on how detailed you would like your class to be, you can choose to have students create a written document with their findings, a poster board or even an oral presentation to present to the class.

Students should be expected to choose **one** specimen of the three they researched at the museum and use this as a springboard to creating a new species. As mentioned previously, if they were interested in sea stars, the student could create a new species found in the coastal tide pools of B.C that was an usual size, colour and/or shape. Perhaps the new species of sea star moves quite a bit faster than it's relatives in the same area, or maybe its diet is varied enough to warrant more exploration. Teachers should encourage students to be as creative as possible, while staying within the realm of possibility for that particular species.

Project presentation of these new species could include:

- Information pamphlets or booklets
- A 'research' document, including specifics about the creature as well as images
- A poster board including images and text
- A slide presentation
- Oral presentations modeled after a Biologist conference
- A project that is largely arts-based, with a variety of illustrations of the specimen and less information text

Extension

After all students have completed and/or presented their new species, as a class come together to create a large scale food web featuring the students new creatures. Encourage dialogue between students about where they feel that their sea specimen should be placed within the web and require students to defend their position based on their species "facts." This food web could be created verbally, in a diagram or a larger class art piece where each species is drawn and connecting arrows are placed to show the interactions of the new species within the Coastal BC habitat.



LESSON PLAN

Grade(s): 7

Subject: Science

Theme: Diversity of Life and Ecosystems



ROYAL BC
MUSEUM

P.L.O.(s)

Assess survival needs and interactions between organisms and the environment

Assess the requirements for sustaining healthy local ecosystems

Objective

SWBAT make links between their project and the Ocean Literacy Principal 5, "The ocean supports a great diversity of life and ecosystems" (can be found at oceanliteracy.wp2.coexploration.org)

SWBAT make links between their project and the Ocean Literacy Principal 7, "The ocean is largely unexplored"

SWBAT create a new organism with previous knowledge of ecosystems, habitat and taxonomy

SWBAT create and justify a description of a suitable environment for their newly discovered organism

SWBAT explain where their organism is placed within a food chain and how it helps to transfer energy throughout the food chain

SWBAT explain how habitats provide basic needs for the organisms living in them

Materials and Resources

oceanliteracy.wp2.coexploration.org for Ocean Literacy Principals

Pencils

Ocean Station Handout (attached below)

Lesson Intro

Before entering the exhibition spaces, discuss with students what respectful viewing and actions are within a museum. Emphasize the importance of being careful while handling any items at the museum and to be aware that there are other people within the space they are visiting and to be respectful (ie not yelling, running etc)

Begin your museum exploration at the live tide pool in the Natural History space, near the sea lions. Ask students what kind of creatures they see within the tide pool (fish? starfish? anemones? etc) and what kind of ecosystem this is (a tide pool). Discuss what animals may be on the top of the food chain and which may be at the bottom. How does energy get passed along this food chain? Discuss the differences that may appear in the food chain since humans are feeding them versus being in the wild.)

Next, visit the fish tank in the Ocean Station and discuss questions similar to the tide pool. Ask students to compare and contrast what they see. What are some differences between the tide pool and the fish tank?

Teacher will explain to students that the ocean supports a wide variety of life and only 5% of the ocean has ever been explored - which means that there are *lots* of unknown creatures we have yet to find (Ocean Literacy Principals 5 and 7.) Today they will take on the role of a biologist on a field study mission who has just found an **entirely new** sea organism. They are tasked with documenting and outlining a variety of facts about this creature, once back in the classroom. While at the museum, students will be required to illustrate and take notes on at least three different species that they might be interested in researching further, to later be used as inspiration for their imaginary sea creature.

*Students should be given ample time to explore the area and look at the variety of live and model specimens available to them. Encourage students to explore their own interests and make discoveries.

Teachers and chaperones should be encouraged to ask students questions to aid student understanding of the subject matter.



Activity

Students will be provided with the Ocean Station handout (attached below) to fill out while they explore the station. **This should not be given to students until they have had some time to explore on their own as many students may fill it out quickly and not make the best of the hands on stations in the exhibit.**

Teachers and chaperones can circulate within the station and aid students as needed. Students should be encouraged to make their own discoveries and connections within the exhibit without explicit guidance from their instructors.

Lesson Closure

After students have filled out the handout, ask them to reflect on why they were drawn to particular species in the museum and which they found the most interesting. Encourage students to make connections between species, as many live within the same ecosystems and will be part of the same larger food web.

Teacher will review with students what they have learned through the hands on activities of the Ocean Station. Ask a few students to share which sea creatures they were most intrigued by. Reiterate that they will be creating a 'new' species from one of the specimens they researched today in the Ocean Station when they get back to class and that they should begin to brainstorm ideas as soon as possible.

Ocean Station Field Study

Name: _____

Date: _____



You are a marine biologist out on your first field study mission and you believe you have found a **new** species in the coastal waters of British Columbia! You are tasked with documenting and outlining a variety of facts about this new specimen once you arrive back at the lab (our classroom.)

Your objective during today's museum visit is to take note of **three** specimens within the Ocean Station that are of interest to you that will later be used as inspiration for your new ocean organism. Good Luck, biologists!

Specimen #1

Classification:

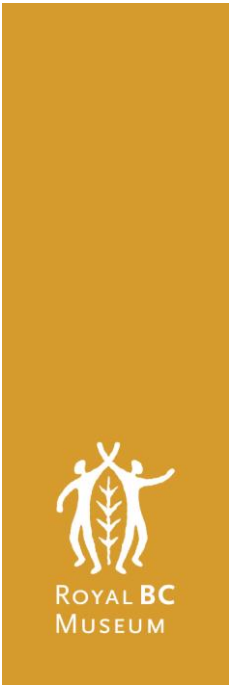
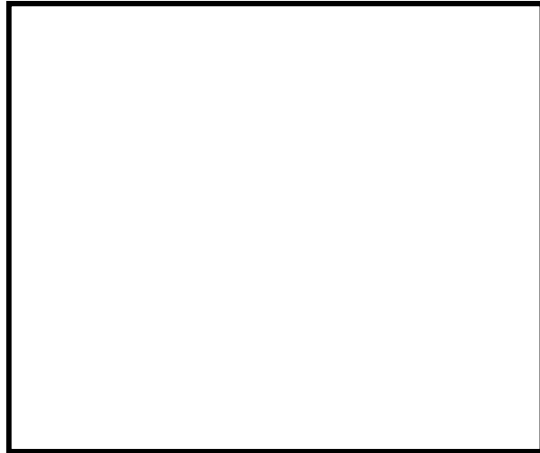
Size:

Range:

Quick Fact:


Specimen #2

Classification:
Size:
Range:
Quick Fact:



Specimen #3

Classification:
Size:
Range:
Quick Fact:



Why did you choose these particular specimens? What about them attracted your attention while in the Ocean Station?

Which specimen do you find the most interesting? Why?



How are these three specimens related? Are they part of the same food web? Ecosystem? Do they live in similar habitats?
