

Duwamish Hill Preserve

Education Pilot Project – Resources for Teachers



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Duwamish Hill Preserve – Some Educational Resources for Native American Heritage
From Holly Taylor 2011

1. General info

The Lushootseed Peoples of Puget Sound Country, essay by Coll-Peter Thrush

content.lib.washington.edu/aipnw/thrush.html

note: good cultural overview, good bibliography

Duwamish Tribe www.duwamishtribe.org/culture.html

Muckleshoot Tribe www.muckleshoot.nsn.us/about-us/overview.aspx

The Indians of Puget Sound, by Hermann Haeberlin & Erna Gunther 1930 (KC Library)

2. Natural Resources

People of Cascadia, by Heidi Bohan, 2009 www.peopleofcascadia.com

Note: good overview of plant & animal resources; check YouTube links under "news"

Seattle University's Vi Hilbert Ethnobotanical Garden

www.seattleu.edu/artsci/ethnobotanical/Default.aspx?id=844

Note: the Plant Profiles & Ethnobotany overview are especially good

Salmon Stories of Puget Sound Lushootseed-speaking Peoples

www.historylink.org/index.cfm?DisplayPage=output.cfm&File_Id=2942

Ethnobotany of Western Washington, by Erna Gunther, 1945 (KC Library)

3. Myths & Storytelling

Mythology of Southern Puget Sound, by Arthur Ballard, 1929

content.lib.washington.edu/cdm4/document.php?CISOROOT=/lctext&CISOPTR=1579&REC=1

note: this is the nutty page-by-page scan of the story collection. The stories specific to the area around Duwamish Hill are the North Wind – South Wind stories (pages 55-64) and Five Brothers and the Beaver (page 122).

Haboo – Native American Stories from Puget Sound, by Vi Hilbert, 1985 (KC Library)

4. Chief Seattle & Treaties

Suquamish Tribe History & Culture (includes link to speech)

www.suquamish.nsn.us/HistoryCulture.aspx

Historylink www.historylink.org

[Point Elliott Treaty 1855](#)

[Medicine Creek Treaty 1854](#)

[Chief Seattle](#)

[Northwest Indian Fisheries Commission](#) (established after Boldt Decision)

[Seattle pioneers petition against a reservation on the Black River for the Duwamish tribe in 1866.](#)

OSPI's Tribal Sovereignty curriculum tribalsov.ospi.k12.wa.us/course/view.php?id=2

note: too much info, but maybe some good resources about treaties

The Eyes of Chief Seattle by the Suquamish Museum & Rod Slemmons, *The World of Chief Seattle* by Warren Jefferson (KC Library)

Duwamish Hill Preserve



NATIVE PLANTS:

B: Bearberry
C: Cedar
D: Doug fir
H: Huckleberry (evergreen)
M: Madrone
O: Oregon grape

INVASIVE PLANTS:

Bk: Himalayan Blackberry
I: English Ivy
R: Herb Robert
S: Scot's Broom

Laurie Rich
2nd Grade Teacher
Thorndyke Elementary School
Created 2011

2nd Grade Soils Unit for use at the Duwamish Hill Preserve

Focus Question	What evidence have we collected from our soil tests that will help us identify what is in our Duwamish Hill soil?
Big Idea	Sand, clay, and humus are three of the basic components in soil and each has unique properties that can be identified using simple tests.
Washington State K-12 Science Standards Met	2-3 INQA, INQB, INQD, INQF 2-3 PS2A, PS2B
Washington State GLEs addressed	2.1.1, 2.1.2, 2.1.3, 2.1.5, 2.2.1
Embedded Assessment	In this lesson students will be applying what they have learned about the properties of sand, clay, and humus, and the different soil tests to identify what soil components are in the Duwamish Hill soil. Students will conduct the tests, compare their results with the tests conducted on sand, clay, and humus, and explain their thinking using their data as evidence.
Guiding Questions	What are the soil tests we have done in this unit? What did they help us find out about soil? How could we find out if sand, clay or humus is in our Duwamish Hill soil?
Content Specific Vocabulary	Sand, clay, humus, properties, texture, roll, smear test, settle test, particle
Pre-Field Trip Activities	Students have used some of their senses to explore the properties of sand, clay and humus. They have also learned how to conduct tests on these soil components. They have gathered data and discussed the results in order to draw conclusions about the various components found in soil from different locations.
Post Field Trip Activities	Students will look at their evidence and draw conclusions about the soil components found in the samples from the Duwamish Hill. We will also conduct two more tests on the soil collected from the Duwamish Hill. Students will test how water moves through the soil and determine whether or not it can hold water. We will also plant seeds in the Duwamish sample and determine which soil samples are best for growing plants.

Resources Needed for Next Time-	Originally we were going to have a soil expert come on our field trip to talk to my students about other kinds of soil tests and to actually conduct some different tests on the soil at the hill. We also thought about discussing the differences in the soil over by the wetlands part of the hill and the soil on other parts of the hill. As a teacher of the soils unit I am always looking for ways of connecting the soil tests conducted in the classroom with their use and purpose out in the field, as well as providing science experiences out in the field.
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Field Trip Activities- Exploring the Duwamish Hill Soil

Activity 1- The Cascade Land Conservancy staff cleared an area in the back behind the hill where we were able to collect some soil samples. Students were divided into groups of 4 and worked together with their adult chaperones to explore dry and wet soil. They added water for a smear test; they did a settling test, and then added water to try to make a ball. These are the tests that they conducted in the classroom on other soil samples. Students have a page in their field trip notebooks to use to record their results.

2nd Grade Plant Observation for use at the Duwamish Hill Preserve

Guiding Questions	<p>What examples of plants can you observe at the Duwamish Hill Preserve?</p> <p>Which of those plants are native? Which of those plants are invasive?</p> <p>Do you see any evidence of plant growth as a result of our planting in November?</p> <p>Can you find a plant that looks healthy? Why do you think it is healthy?</p> <p>What parts of the plant can you identify?</p> <p>How do those parts help the plant to function as a system?</p> <p>Can you find a plant that looks unhealthy? Why do you think it is unhealthy?</p>
Big Idea	Many factors, including soil, affect plant and root growth. Most plants grow best in loose, moist soil that provides good drainage along with high organic content.
Washington State K-12 Science Standards Met	<p>K-1 LS2A, K-1 LS2B, K-1 LS2C</p> <p>2-3 LS1A</p> <p>2-3 LS2D</p>
Washington GLEs	1.1.5, 2.1.1, 2.1.2, 2.1.5

Addressed	
Content Specific Vocabulary	Seed, stem, leaf, roots, healthy, unhealthy, native, invasive, system
Pre-Field Trip Activities	Students received a series of lessons on plant growth and development as part of our 2 nd grade science unit on soil. The main focus of the lessons was on which types of soil produced the healthiest plants. There were related activities and lessons that included learning about how the different parts of the plant work together to form a system. They also learned about the life cycle of the plant and what happens when plants die and become part of the soil. We reviewed what the functions of the main parts of plants were and how those parts work together as a system. We also discussed variations in plants they might find as examples (trees, shrubs, grasses etc.) We reviewed some of the native and invasive species of plants that they learned during their first field trip in November.
Post Field Trip Activities	Students planted cucumber seeds in different types of soil including soil from the hill and then observed the growth of the cucumber plants over time, making measurements and observations of healthy verses unhealthy cucumber plant systems. Students shared out in small groups what plants they chose to observe at the Hill and shared ideas about what makes plants healthy or unhealthy. This lead to a discussion of native vs. invasive plants and how invasive plants take away resources that native plants need. Students shared the results of their scavenger hunt on the Hill that included adding to their list and knowledge of native plants growing there.
Resources Needed for Next Time-	It might be helpful to increase their knowledge of the different plants growing on the Hill. We discussed how an intern might create a list of important plants growing on the Hill along with a non-linguistic representation of the plants, preferably photos, that could then be used to add to the already existing list of plants that the students have been exposed to during the previous visit to the Hill. Also, we could use some ideas for how to help our natural environment at school, such as native plants that might grow well or invasive plants that could be removed from common areas.

Field Trip Activities- Plant Growth and Development

Activity 1- Students had an opportunity to work in groups of 4 supervised by an adult to plant native trees or plants using the guidelines set up by Cascade Land Conservancy staff. They worked for about 30 minutes and planted as many trees or plants that time would allow.

Activity 2- Students went on a scavenger hunt after lunch. Again, they divided into groups of four supervised by at least one adult and took a walk all around the Hill looking for specific things as indicated in their field trip notebooks. They had things to draw, questions to answer, and plants to identify. It was the second to last activity of the day and they had about 45 minutes in which to explore. The results of their explorations were used during the post field trip activities in the classroom.

Western Red Cedar



Big Leaf Maple



Oregon Grape



Bearberry



Black Cottonwood Tree



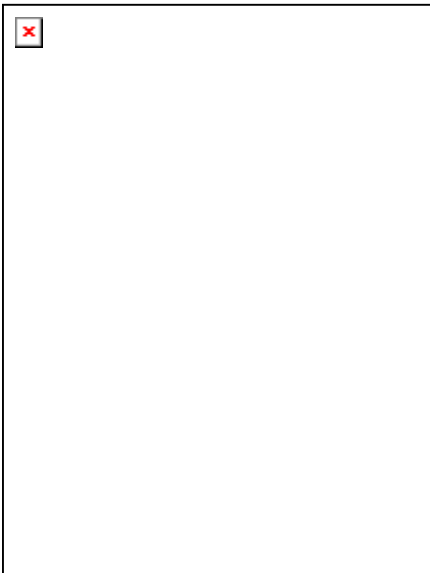
Red Flowering Currant



Blue Elderberry



English Ivy



Himalayan Blackberry



Himalayan
Blackberry



Rubus discolor

Upper leaf surface

Slichter 97

Scotch Broom



Pacific Madrone Tree



(Description of document: this document helps the students review some of the native and invasive plants that they learned about during the first field trip. There is a list of these plants complete with photos that each group will have with them to help them remember and to help with identification. The native plants on this list were chosen for their significance in the lives of the Native Americans that inhabited this area and were used either as sources of food or materials. The students learned about this during pre and post field trip activities for the first field trip.)

Can you find some of the plants on this list? Remember that plants come in different varieties such as trees, shrubs, grasses, etc. Ask your parent chaperone to show you pictures so that you can identify these special plants. Then circle the word to identify it as a native or invasive species.

- Western Red Cedar (hint, the leaves look like scales)

native or invasive

- Douglas Fir (hint, the leaves look like needles)

native or invasive

- Big Leaf Maple

native or invasive

- Oregon Grape

native or invasive

- Black Cottonwood Tree

native or invasive

- Himalayan Blackberry

native or invasive

- Bearberry

native or invasive

- Red Flowering Currant

native or invasive

- Blue Elderberry

native or invasive

- English Ivy

native or invasive

- Scotch Broom

native or invasive

- Pacific Madrone Tree

native or invasive

Can you learn the names of some other plants? Ask one of our experts for help. Then write down the name and tell if it is native or invasive.

- _____ native or invasive

- _____ native or invasive

- _____ native or invasive

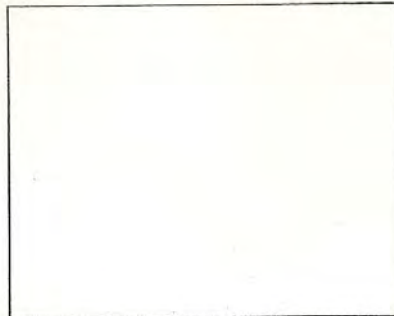
- _____ native or invasive

- _____ native or invasive

Record Soil Test Results

Test	
Smear	
Rolled Ball	
Settling	

Smear Test



Settling Test



(Explanation of the document: These questions were part of the field Trip notebook that the students made and brought with them to the Hill.)

1. Find a plant that looks healthy. Draw a picture of it and explain why you think it's healthy.
2. Find a plant that looks unhealthy. Draw a picture of it and explain why you think it's unhealthy.
3. Find your favorite plant. Draw a picture of it and explain why you like it. Is your favorite plant a native plant or an invasive plant?
4. Draw a picture of an animal you think might live on or near the Duwamish Hill Preserve. Write down what you think the animal eats, where it might sleep, and where you think it is right now.
5. Find a place where you think an animal might be able to hide. Draw a picture of the animal in its hiding spot.
6. Find a place that looks like a good spot to rest, relax, and enjoy the nature in the Duwamish Hill Preserve. Draw a picture of your special place with you relaxing there.
7. Draw a picture of your favorite thing at the Duwamish Hill Preserve. Explain why it's your favorite thing.

Lindsay Morishima
 3rd Grade Teacher
 Thorndyke Elementary School
Created 2011

3rd Grade Rock Cycle Unit for use at the Duwamish Hill Preserve

Guiding Questions	What evidence can we find of the rock cycle at the Duwamish Hill Preserve? What types of rocks can we find at the Duwamish Hill Preserve? How can you guess what type of rock a sample might be?
Washington State K-12 Science Standards Met	2-3 PS2B 2-3 INQA 2-3INQC
Washington State GLEs addressed	1.3.5 1.1.5 1.2.3 1.3.4 2.1.4 2.1.5
Content Specific Vocabulary	Igneous, Metamorphic, Sedimentary, lava, magma, volcano, fossil, minerals
Pre-Field Trip Activities	<p>Students studied the rock cycle in depth as part of a 3rd grade science unit on rocks and minerals. They were therefore familiar with the 3 main types of rocks and characteristics of those rock types. In preparation for the field trip we reviewed the rock cycle and common characteristics of each type of rock. Students prepared a science notebook in advance with pages devoted to each main rock type and it's characteristics.</p> <p>Igneous- formed from melted rocks (lava, magma), volcanic rocks, often has minerals present, bubbles, hard, heavy</p> <p>Metamorphic- changed rocks due to heat and pressure, rocks may look torn or twisted</p> <p>Sedimentary-rocks formed underwater, often has layers visible, fossils of shells, plant or animals may be present, may be made of small rocks, pebbles, sand, clay or mud</p>
Post Field Trip Activities	Students shared out their observations in small groups. Whole group discussion of the rock cycle and why one type of rock was hard to identify and find evidence of. (metamorphic rocks)
Resources Needed for Next Time-	I was unable to identify any examples of metamorphic rocks or where metamorphic rocks may have formed in our area. Some examples or a better explanation would be great to discuss with students for next time.

Field Trip Activities- Rock Cycle

Activity 1-

Students were able to see an example of sedimentary rock upon arrival at the hill. Students were able to observe the layers of the hill and see how plants and trees roots grow into crevasses and break off parts of the rock. This helped them understand how rocks are broken down over time. Students observed a sample of sedimentary rock and how brittle it was.

Activity 2-

Students walked up the trail and were able to stop at a spot that had examples of sedimentary and igneous rocks. Students were able to see an example of a rock with fossils of shells. They were also able to observe several rock samples that had minerals present in them.

Activity 3-

Students stopped at the outdoor classroom and drew a sketch of the river. We were able to discuss how sedimentary rocks form under water. If more time would've allowed we could have also discussed how the river carries sediments and discussed erosion and build up of layers.

Activity 4-

Students drew a picture of a volcano, we discussed the volcanic nature of all the mountains and discussed Mt. Rainier as an example of a volcano in our area. We reviewed the idea of a magma chamber, lava tubes etc.

3rd Grade Plant Observation Unit for use at the Duwamish Hill Preserve

Guiding Questions	What examples of plants can you observe at the Duwamish Hill Preserve? What parts of the plant can you identify? How do those parts help the plant to function as a system?
Washington State K-12 Science Standards Met	2-3 SYSC 2-3 SYSB 2-3 LS1A
Washington GLEs Addressed	1.1.6 1.2.1 1.2.7 1.3.10 1.3.8 2.1.4 2.1.5 3.2.4
Content Specific	Stem, leaf, petal, flower, pollen, roots

Vocabulary	
Pre-Field Trip Activities	Students studied plant growth and development as part of a 3 rd grade science unit. We reviewed what the function of the main parts of plants were and drew a sample ahead of time in our science notebook with parts identified. We also discussed variations in plants they might find as examples (trees, shrubs, grasses etc.)
Post Field Trip Activities	Students shared out in small groups what plant they chose to observe and shared ideas about what makes plants healthy or not healthy. This lead to a discussion of native vs. invasive plants and how invasive plants take away resources that native plants need.
Resources Needed for Next Time-	Ideas for how to help our natural environment at school. Native plants that might grow well or invasive plants that could be removed from common areas.

Field Trip Activities- Plant Growth and Development

Activity 1-

Students selected and sketched a plant of their choice identifying the main parts of the plant. If time would have allowed they would have needed to identify the function of each part.

Activity 2-

Students helped clear invasive plants.

Additional Activities-

Students could identify examples of invasive plants and how they are harming the Duwamish Hill Preserve. There are lots of examples of trees with ivy growing up the trunks or they can find examples of how blackberries have taken over certain area. They could then identify which plant need was taken away (space, water, light or air) by the invasive plant.

Cindy Lewis
Science Teacher
Showalter Middle School
Created 2011

Duwamish Hill Preserve

Social Studies and Science Integration

Lesson Plan

Standards:

Social Studies:

3.1 Students will understand the physical characteristics, cultural characteristics, and location of places, regions, and spatial patterns on the Earth's surface

4.3 Students will understand that there are multiple perspectives and interpretations of historical events.

4.4 Students will use history to understand the present and plan for the future

Science:

EALR 3 Application

Students will understand that people in all cultures have made and continue to make contributions to society through science and technology

Lesson Over-view

Students will prepare for the trip to the Duwamish Hill Preserve with the following lesson topics

Social Studies:

1. Geography of the area including placement of Duwamish Tribal villages
2. Resources of the region and what resources were used for which purposes
3. General information on Duwamish lifestyle and societal norms
4. History of European/American exploration and traders in the area

Science:

1. Duwamish myths to explain predictable motion of Sun-Earth-Moon and the methods used to track time throughout the year

Learning Target:

Students will understand the cultural and historical significance of the Duwamish Hill Preserve.

Students will be able to explain the use of the Long House in Duwamish society, mapping possible trade routes and partners along the original river path and retell the Epic of the Winds myth as a way to explain seasons in an ancient culture

Students will experience gathering of a food source and consider the amount of time and effort needed to secure food and materials for daily living.

What we will need help with:

Experts to help with the groups doing the non-native species clearing

Identify plants and resources for the people (food, housing, clothing, equipment)

Help students realize how much plant life had to be gathered and processed to actually come up with a meal

Guide the specific discussions (hopefully they will have time in classes before getting to the Hill) so that students can complete their assignments. Cheat sheets provided

Material to weave and instruction on how to weave the material

Groupings

Students will be placed in groups of 6. (Family Unit)

At the Hill there are three learning areas.

Time Line:

Leave SMS 11:10

Arrive at Hill: 11:25

Greeting and separate to groupings for the three areas

11:25 to 12:25

12:25 to 12:55 Lunch

12:55 to 1:10 Groups meet

1:10 to 1:45 Presentations

1:50 Bus to weir if possible

2pm return to SMS

At the look out:

1. Students spend time "harvesting" non-native plants. Discussion topics include how much time/work to gather enough for the village and how native people would know when to harvest certain plants, salmon runs or other animal species

2. Students will work together to create a plan to trade with other villages and discuss the impact of white settlers. Consider trading relationships and treaties with other groups around them. Students need to understand distances and time spent traveling and how informal boundaries could be set. They will create maps of the area and will present their plan to the rest of their group and use as part of their plan to present to the rest of the village during lunch. (2nd presentation) Students will use the maps to find the original route of the river, discuss where villages and trades could be made and consider reasons why the river was altered during the modern era

At the area in the back, by the shooting range

1. Students spend time "harvesting" non-native plants. Discussion topics include how much time/work to gather enough food and supplies for the village and how gathering/hunting changed as the white settlers began to move in to the area and discuss the types of changes in the use of resources.
2. Students identify the various plants and what resource each provides. They can measure out an area to build a long house and discuss who will live there and where each designated group would be. (Need dimensions for a Long House, measuring tools, how to estimate how much of each resource is needed....) This group of students presents to their own group first on how this plan effects them and then to the group as a whole, 2nd presentation.

At the outdoor Classroom

1. Students spend time "harvesting" non-native plants. Discussion topics include how much time/work to gather enough food to feed the village and the negative impact of non-native species on the environment/habitat.
2. Students listen to Local stories/native myths about the Moon and the Coyote and other legends. Their presentation to the village explains the coming harvest seasons and how native people kept track of time through myth/story-telling or by reading the angle of separation/path of the ecliptic to determine the season. Students can use the short version of the Epic of the Winds as a guide to retell the story to the rest of the students...a longer version will also be provided

While the students eat lunch I will tell the story of how the people came across the ice bridge about 11000 years ago to settle in this region and give a time line of the history of the first people before European/western settlers, review what they learned about native traditions and lifestyle of the native peoples. Ms. Herda will have covered most of this in her classes, we will then talk about the Point Eliot Treaty and read the message of Chief Sealth to students. Students will discuss in groups to gain understanding and share opinions from their groups to the rest of the class. Students will consider their options for living with the treaty and how their lifestyle could change while living with the ever increasing number of white settlers. We will then share the reality of where the people that lived in the Hill area ended up and their loss of tribal recognition.

If time allows possibly teach students a Native American game while waiting for the bus...possible stop at the salmon weir on the way back to school.

Using your senses...

Name:

Choose a space that is separate from everyone else. Draw what you see here:

Focus on a specific tree, plant, animal, or insect. Use single words to describe how it smells:

Describe what it sounds like (or what the area about the object sounds like) :

Describe what it feels like:

Describe what you think it might taste like (but don't actually taste it!!):

See if you can put the words you used above into a poem.

Share your ideas and poem with a friend.

During five senses station –

Teacher explains that all living things need to use all their senses to find food, shelter, and water.

Teacher gives an example of the deer –needs to know which plants are okay to eat, needs to know where rivers and streams are, needs to know when danger is coming. How can a deer do all these things? Which senses is it using? In the wintertime, the deer has to search for berries that are still around like the berries that grow on the Pacific Madrone Tree. Why is it important for deer to find these specific berries?

Hand out worksheet and give an example (as if you were completing the worksheet for a plant near you.) Have the students help you think of descriptive words for each section for your example.

Students should stand apart from each other and complete their own worksheet.

Encourage them to complete something new, something that is interesting to them.

If there is time, show how you can turn your descriptive words into a poem and have the students do the same for their examples.

Students should share their poems with their partners (explain that this is a rough draft and they will have time in class to work on them.). Ask if any students would like to share whole group.

Schedule for Thorndyke Spring Field Trip
Two Classes (2nd & 3rd grade)

9:15	Leave school
9:30	Arrive Hill
9:40 – 9:50	Welcome & Introduction
10:00 – 10:30	Activity #1 Laurie's class: plant restoration monitoring, invasive removal Lindsay's class: rocks
10:45 – 11:15	Activity #2 Laurie's class: soils Lindsay's class: plant restoration monitoring, invasive removal
11:15 – 11:30	Break & snack for everybody at the outdoor classroom Introduction of scavenger hunt
11:30 – 12:15	Activity #3 Scavenger hunt – both classes work together
12:20 – 12:45	Lunch
12:45	Load bus
1:00	Back at Thorndyke