Wildcrafting and Weaving Grade 5

Tla'Amin Culture and Traditional Plants

CLASSROOM BEGINNINGS LEARNING PACKAGE

March 3, 2017

Authored by: Karin Westland

Outdoor and Ecological Learning, Powell River Board of Education

Wildcrafting and Weaving Grade 5

Using Inquiry to Target the Relationship between People and Plants

Introduction

Wildcrafting is the practice of collecting plants from their natural, or "**wild**" habitat, for food or medicinal purposes. It applies to uncultivated plants wherever they may be found, and is not necessarily limited to wilderness areas. The Wildcrafting and Weaving Curriculum Package is designed to introduce all Grade 5 students to Tla'amin Culture with a focus on Traditional Plants and their many applications. The lessons in this package are experiential and will promote place-based connections through a Tla'amin Cultural lens.

How to Use this Resource

The Wildcrafting and Weaving Curriculum Package has 3 Components:

Part 1. Classroom Beginnings: Recommended for use in the classroom prior to the Wildcrafting and Weaving Field Experience.
Part 2. The Wildcrafting and Weaving Field Experience Curriculum: A facilitated curricular experience.
Part 3. Classroom Culminations: Recommended for use in the classroom following the Field Experience.

Wild-Crafting and Weaving Grade 5: Curricular Competencies

Science	Make observations in familiar or unfamiliar contexts. Experience and interpret the local environment. Identify First Peoples perspectives and knowledge as sources of information. Express and reflect on personal, shared, or others' experiences of place.
Social Studies	Use Social Studies inquiry processes and skills to — ask questions; gather, interpret, and analyze ideas; and communicate findings and decisions
Language Arts	Explain the role of language in personal, social, and cultural identity Demonstrate awareness of the oral tradition in First Peoples cultures Identify how story in First Peoples cultures connects people to land Use writing and design process to plan, develop, and create texts for a variety of purposes and audiences Use oral storytelling processes
Arts Education	Intentionally select artistic elements, processes, materials, movements, technologies, tools, techniques, and environments to express meaning in their work Explore a range of cultures, and the relationships among cultures, societies, and arts
Physical Education	Develop and demonstrate safety and leadership in physical activities Participate daily in physical activity designed to enhance and maintain health components of fitness

Wildcrafting and Weaving Grade 5

Using Inquiry to Target the Relationship between People and Plants

Formulating Questions about People and Plants

These lessons focus on formulating questions about how people, plants, and products are connected, past, present, and future. Through a series of three lessons, students will develop an understanding of the connection between raw / natural materials and products. Students will do a comparative analysis of products such cell phones and cedar baskets. They will evaluate and compare product life cycles and the environmental impact of those products. Lastly, students will be introduced to native plant species significant to the Tla'Amin nation and will begin an inquiry into their significance and application.

Materials:

- Post-it Notes
- Chart Paper
- Access to Technology
- A variety of visuals/images/resources which highlight some of the many uses of plants: See *Plants and People Slideshow*.
- Screw Drivers
- 15 everyday products that can be disassembled (i.e toasters, cell phones, telephone, etc.)

Part 1: Mindmap Prior Knowledge

As a whole group, create a Mind Map / Web showing students' knowledge regarding the relationship between plants and people. Ask students to look around the classroom for products derived from plants. Create a Web of connections between plants and the classroom based on students' observations and ideas. Hang this web in the classroom for the duration of this unit. Add to this web as students learn more about the relationship between plants and products derived from plants.

Part 2: Plants and Product Life Cycles

Background: This lesson explains that all products are derived from nature and, like plants, products have life cycles that can be studied to estimate the ecological impact of the product. Students are challenged to research and qualitatively analyze the life cycle of one product, and then create an alternative design that could meet the same need with lower ecological impact.

Activity 1: Information Presentation (Show Plants and People Powerpoint)

People of all cultures harvest plants and other materials from the natural environment in order to create items necessary for survival or pleasure. Common in our shared history, is a practice of harvesting natural resources and lightly processing them in order to make a product. Today, most products derived from the environment are produced in partnership with Engineers. These products are typically highly processed and have a significantly greater effect on the environment.

When making new products, Engineers often consider the environmental impacts to our air, water and natural resources. To do this, engineers consider the entire life cycle of a product — from materials acquisition, materials processing, manufacturing, packaging, transportation, use and disposal of the product. These represent all the life phases of a product, similar to the life cycle of a plant.

For example, the cedar tree passes through four stages during its life cycle: seed, seedling, tree, and cone. You can use the example of a cedar tree and ask students the following questions to help them compare and contrast product life cycles with the life cycles of living things.

- What are some steps of the life cycle of a cedar tree? (Answer: seed, seedling, tree, and cone).
- What are some steps in the life cycle of a product? (Answer: materials acquisition, materials processing, manufacturing, packaging, transportation, use and disposal.)
- How is the life cycle of an organism similar to the life cycle of an engineered product? (Possible answers: Both life cycles follow the object from birth to death, or beginning to end. Both cycles involve the flow of energy through the lifetime of the object.)
- How do the two cycles differ? (Answer: Often the life cycle of a product ends with disposal, where the life cycle of a natural organism is recycled into nutrients in the Earth. Looking at the life cycle of a product helps us understand the Earth's natural resources and energy and, particularly, how we produce waste.

There are several types of life cycle assessments for engineered products. Some of them include:

- *Cradle-to-Grave*: The full life cycle of a product from raw materials (cradle) to the disposal phase (grave).
- *Cradle-to-Gate*: A partial product life cycle assessment that investigates a product from raw materials (cradle) to the gate of the manufacturing facility before transportation to the consumer.
- *Cradle-to-Cradle*: A product life cycle assessment, where the end phase includes recycling of the product into a new product. The recycled product can be identical or different to the original product.

A great example of a product manufactured for cradle-to-cradle is a Nike sneaker. This is a product students will be familiar with, and designers at Nike have been working to create a product that will not add harmful waste to the environment and can be engineered with sustainable inputs. For more information visit: http://www.mcdonough.com/writings/inspiration_innovation.htm

Part 2: Plants and Product Life Cycles (continued)

Activity 2: Product Life Cycle Assessment

Materials:

- Pencils
- Any manufactured product to analyze; electronics are the most fun (i.e. VCRs, clock radios, cell phones etc.) with original packaging, if possible
- Screwdrivers, scissors, etc. for disassembling product
- *Life Cycles Lesson Activity Worksheet (See Appendix)*

Before the Activity

1. Gather several metal and plastic products for the students to reengineer. Some example items might include a broken CD player (or old VCR player if you can find one!), a coffee pot, a stapler or a children's toy.
2. Provide a selection of screwdrivers, etc. to have the students take apart the products.

SAFETY NOTE: Be sure to read any safety warnings that came with the products to be sure that disassembling them will not put students at risk of injury or in contact with harmful substances.

Make sure students are careful when taking apart their products. If you don't want students to take apart the product, you can disassemble the product first, and then show students.

DO NOT do this activity with televisions or computer monitors.

Procedure:

1. As an introduction, have students watch *The Story of Electronics* https://www.youtube.com/watch?v=sW_7i6T_H78
2. Divide the class into pairs.
3. Give each student pair 1 product: an electronic is most fun.
4. Introduce the following key vocabulary:
    - Raw Material: The basic, natural material, from which a product is made. (ex. wood, oil, cotton)
    - Packaging: Materials used to wrap or protect goods.
    - Plastic: A human made material comprised of oil-based polymers; it can be rigid or malleable.
    - Metal: A solid material that is typically hard, shiny, malleable, fusible, and ductile, with good electrical and thermal conductivity (e.g., iron, gold, silver, copper, and aluminum, and alloys such as brass and steel).
    - Transportation: The movement of **goods** from one location to another. Modes of **transport** include air, rail, road, water, cable, pipeline and space.
5. Invite students to take apart the product in order to get a better idea of the components and manufacturing process. Have students record their findings on the *Life Cycles Lesson Activity Worksheet*. *Life Cycles Lesson Activity Worksheet (see Appendix)*

Part 2: Plants and Product Life Cycles (continued)

Activity 2: Product Life Cycle Assessment (continued)

6. Give students time to complete the life cycle analysis of their products. (Note: more complex products will take longer to analyze than less refined /more natural products. Choose your products wisely, in order to facilitate a deeper conversation about products and their environmental impact.

7. Ask students to share the total impact analysis score with the rest of the class. Create a class list of products and their scores on the board. Discuss the range of impacts the products have on the environment. (i.e. Bigger numbers mean a greater environmental impact).

8. Have students think about modifications they could make to the life cycle of their product. Have them complete their improvement analysis on their worksheet and discuss any improvements with the class. Are there any recurring ideas for improvement in the class?

Activity 3: The Life Cycle of Traditional Products

Materials:

- Some samples of woven baskets, wool sweaters, or other products that are made entirely from minimally processed natural materials.

Procedure:

As a group, showcase three products created using original materials and traditional cultural practices such as a basket, a cedar hat, and a wool robe. Invite students to discuss as a whole or in small groups, whether or not they believe this product will have a better impact analysis score than products like a cell phone or toaster? (i.e. What kind of impact does it have on the environment)? Have students decide whether the life cycle of these products is Cradle-to-Cradle or Cradle-to-Grave. There may not be a correct answer as baskets that are entirely derived of unprocessed natural materials will return directly to the earth and compost into soil, which is debatably another product.

Compare modern products like cell phones and toasters with some of the traditional items? Aske students which items would be considered wants or needs? How do the products we make and choose tell a story about who we are? What does that story say about our relationship to the Earth?

Conclusion

Close the lesson with a summary that includes a conversation around how products are a reflection of culture and the degree to which natural materials are processed is directly connected to our environmental impact.

Part 3: Plants, Place, and Culture

Purpose: To promote curiosity and a depth of understanding regarding native plants.

Materials:

- Copies of the images associated with Plants of the Pacific Northwest
- Copies of "Formulating Effective Questions" (see below)
- Chart Paper

Procedure:

Step 1: Divide the class into small groups.

Step 2: Give each group 1 image of a plant found in their "backyard." (see Appendix for *Plants of the Pacific Northwest)*

Step 3: Ask students to look carefully at their image and generate several questions on post-it notes based on their image, considering the contexts: habitat, parts of the plant, uses, and status

Step 4: Review and post criteria for formulating open-ended questions. (See "Formulating Effective Questions")

Step 5: As students/groups generate questions, suggest that they place their post-it notes on a piece of chart paper. Include the image of their plant.

Step 6: Circulate, observe and prompt as needed to ensure students follow criteria.

Step 7: After a designated period of time, students complete a gallery walk, noting others' questions. Advise students not to discuss, judge or answer any of the questions at this time.

Step 8: Collect all posted questions.

BLM 1.1 – Formulating Effective Questions

Students formulate questions, either independently or with guidance from the teacher, and either individually or in groups:

- To explore various events, developments, and/or issues that are related to the overall expectations in order to identify the focus of their inquiry;
- To help them determine which key concept (or concepts) of social studies thinking is relevant to their inquiry;
- That reflect the selected concept(s) of social studies thinking;
- To develop criteria that they will use in evaluating evidence and information, making judgements or decisions, and/or reaching conclusion.

Beginning with Who, What, Where, Why, When or How

When developing criteria for effective questions, encourage students to formulate open-ended, divergent questions based on higher level thinking skills. Often, these types of questions begin with who, what, where, why, when or how.

Here are some suggestions for question starters for this lesson, considering: habitat, food, industry, resources and transportation:

Who?
Who uses this plant….? Who collects/gathers…?

What?
What did…..eat? What habitat…? What would happen if…?
What must have happened when…? What differences exist between…?
What can you make with …? What uses does …?
What might have been the impact of…? What might be some problems with …?
What kind of…? What do you know about this …based on…?

Where?
Where could…have happened…? Where did…get…?

Why?
Why did the…? Why does it…occur? Why can it …?

When?
When could…have happened…? When did….change?

How?
How does it …survive? How is this… similar to…? How does the …? How is this …?
How many ways can…? How many ways can …? How does it get what it …?

Name_____

Product Development and the Environment Activity – Life Cycle Assessment Worksheet

Product that you are assessing:

_____

Inventory analysis

Step 1 Materials Acquisition: Each material in a product has its own life cycle of use and waste. List all the materials (metal, plastic) in your product. One point is assigned for each different material in the product.

Type of Raw Material	Points
	1
	1
	1
	1
	1
Total Points	

Step 2 Materials Processing: Most metals and plastics must be processed before they are in a useful form for manufacturing. Again, list the metals and plastics in your product. Assign one point for each material.

Plastics or Metals in the Product	Points
	1
	1
	1
	1
	1
Total Points	

Step 3 Manufacturing: All of the processed materials in your product must be formed and shaped into something useful for the product (like a metal screw or a plastic lever). List the different parts and pieces of your product that have been manufactured here. Assign one point for each part.

Different Parts and Pieces in the Product	Points
	1
	1
	1
	1
	1
	1
	1
Total Points	

Step 4 Packaging: How is your product packaged for sale? Mark the boxes that correspond to the packaging of your product here. Add of the total points for the packaging of your product.

Packaging	Points
None	**0**
Paper or cardboard packaging only	**5**
Plastic packaging only	**15**
Plastic and cardboard packaging	**10**
Styrofoam or rubber packaging	**15**
Instructions sheets included separately in package	**5**
Total Points	

Step 5 Transportation: Once a product is packaged, it needs to be transported to somewhere else for storage or sale. Transportation by trucks, planes or boats require fuel for energy and contribute to air pollution. Mark the box if your product uses transportation in any way. List the total points for the transportation of your product

Transportation	Points
Yes, by plane, truck, or boat	**15**
None	**1**
Total Points	

Step 6 Use of the Product: all products have an amount of time that they can be used and reused. Check the box below that describes how long your product can be used.

Use of Product	Points
Product can be used once	**15**
Product can be used for 5 years	**10**
Product can be used for over 10 years	**5**
Total Points	

Step 7 Disposal: Once a product has been used, it can be disposed of or recycled. Check the box which describes your product below.

Parts of the Product Made from Plastics or Metals	Points
Product must be thrown away	**15**
Some product materials can be recycled	**5**
All of the product and product materials can be recycled	**0**
Total Points	

Impact analysis

Add up the points for your product to determine its overall impact on the environment:

Total Points	

How did the overall environmental impact of your product compare with another product in your class?

Improvement analysis

1. What could you change in your product to improve its impact on the environment? Describe your improvements here.

2. Look at your Inventory Analysis above. Re-calculate your score if you were to use the improvements you just described. Did your score change? By how much?

3. What would you need to do to reduce the environmental impact of your product even more?

4. There are several types of engineering life cycle assessments. Read the three descriptions below.

   Cradle-to-Grave: The full life cycle of a product from raw materials (cradle) to the disposal phase (grave).

   Cradle-to-Gate: A partial product life cycle assessment that investigates a product from raw materials (cradle) to the gate of the manufacturing facility (gate) before transportation to the consumer.

   Cradle-to-Cradle: A product life cycle assessment, where the end phase includes recycling of the product into a new product. The recycled product can be identical or different to the original product.

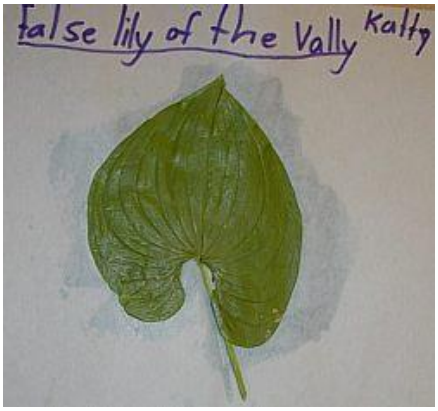
Which description best fits your product? Why?

Vanilla Leaf

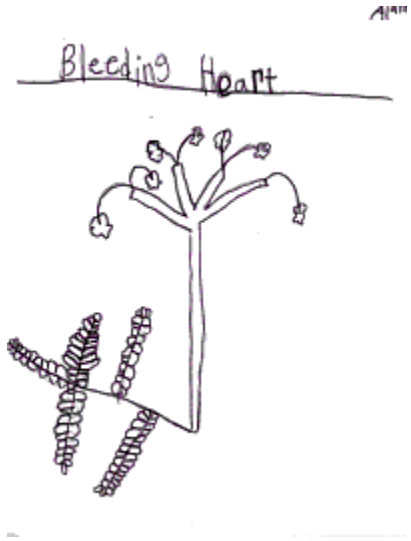
Sword Fern

Turn a sword fern upside down and you will see small round **spores.**

False Lily of the Valley



Bleeding Heart

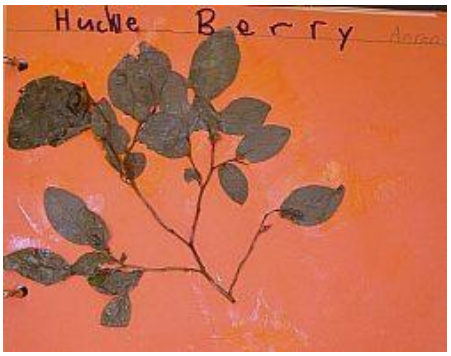


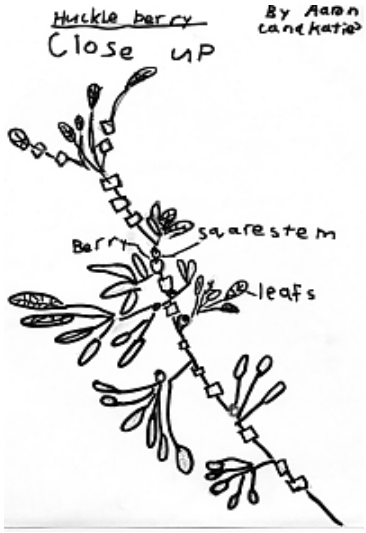
Oregon Grape

Salal

Buttercup

Huckleberry





Skunk Cabbage

Yarrow

Yarrow Leaves

Yarrow Flower

Douglas Fir Tree

Douglas Fir Bark

Douglas Fir Needles

Douglas Fir Cone

Western Red Cedar Tree

Western Red Cedar Bark

Western Red Cedar Needles

Western Red Cedar Cones