

Kayaaní PLANTS

Grade Levels K-2



A series of elementary level thematic units featuring Tlingit language, culture and history were developed in Juneau, Alaska in 2004-6. The project was funded by two grants from the U.S. Department of Education, awarded to the Sealaska Heritage Institute (Boosting Academic Achievement: Tlingit Language Immersion Program, grant #92-0081844) and the Juneau School District (Building on Excellence, grant #S356AD30001).

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Lessons were field tested in Juneau classrooms in 2005-6.

All units are available online at sealaskaheritage.org.

Cultural Significance

Traditionally, Tlingit people gathered plants for food, medicine, making rope and nets, baskets and clothing, baby carriers and diapers. Trees provided shelter, tools, transportation and firewood for winter warmth. Although many needs are now met with commercially produced plant products, Tlingit people continue to gather plants for nutritious food, herbal medicine and to create cultural treasures. Tlingits believe everything has a spirit. Respect and thanks are expressed when gathering what nature provides.

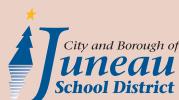
Elder/Culture Bearer Role

Elders/Culture Bearers can share traditional methods for gathering and preparing plants for food as they accompany students during Spring and Fall field trips. Devil's Club, Fiddlehead Ferns, Indian Celery, Labrador Tea, Chocolate Lily, Indian Rice, Rose Hips, Wild Carrot Roots, Skunk Cabbage and Nettles are among the important traditional plants to be gathered. Elders/Tradition Bearers can tell students legends and personal/clan stories relating to these and other plants.

Overview

In this unit students observe plants in their natural environment. They gather traditional plants and learn how they are prepared by Tlingit people. Students learn how a plant begins to grow by looking for the embryo inside a seed, plant seeds in soil and record plant growth in an observation log.

Students take field trips to gather Devil's Club to prepare air freshener, Labrador Tea to make tea, Indian Celery to peel and eat, and Fiddlehead Ferns to steam. They look for Wild Rice to find the rice kernel bulbs. Students make a book about useful Native plants. They make fern prints to decorate the cover of a Native Plants Recipe Book which they create throughout this unit and later share with their families.





Alaska State Standards

Math

- A1) Understand and use numeration, including numbers, number systems, counting numbers, whole numbers, integers, fractions, decimals, and percents
- A5) Construct, draw, measure, transform, compare, visualize, classify and analyze the relationships among geometric figures
- A6) Collect, organize, analyze, interpret, represent, and formulate questions about data and make reasonable and useful predictions about the certainty, uncertainty or impossibility of an event
- D2) Draw logical conclusions

Science

- A12) Distinguish patterns of similarity and differences in the living world
- A14) Understand the interdependence between living things and their environments; that the living environment consists of individuals, populations and communities
- A15) Use science to understand the local environment

Cultural Standards

- A4) Practice traditional responsibilities to the surrounding environment.
- C1) Perform subsistence activities in ways that are appropriate to local traditions.
- D3) Interact with Elders in a loving and respectful way that demonstrates an appreciation of their role as culture-bearers and educators.





Lesson #1 Let's Look at a Plant

Objectives

Students:

- Observe a whole plant and the parts of a plant (roots, stem, leaves, seeds or fruit)
- Learn the names of plant parts in English and Lingít
- Learn the Tlingit way to show respect to plant
- List familiar plants and their unique parts (carrot-root, celery-stem, broccoli-flowers, spinach-leaves, tomato-fruit, sunflower-seeds, etc.)

Time

45 minutes

Materials

- Plant Plumbing: A Book About Roots and Stems (Growing Things) by Susan Blackaby, Picture Window Books, 2003, ISBN#140480109X
- Prior to teaching this unit, gather the roots, stem, leaves and flowers of the following plants:
 - Chocolate Lilies, Fiddlehead Ferns, Labrador Tea, Silverweed, Devils Club, Indian Celery
- Large piece of butcher paper to lay plants on in the classroom meeting area
- Picture/word cards of plant parts in English and Lingít
- Chart paper to record student knowledge of familiar plants
- 9 x 12 construction paper for Build a Plant activity
- Glue
- Scissors
- Crayons, markers or colored pencils

Vocabulary

Lingít

ka.éix át
xaat
at kadíx'i
kayaaní
k'eikaxwéin
at x'aakeidí
tléikw

English

plants
 roots
 stem
 leaf
 flower
 seed
 berry/fruit

Lingít Phrases

Ka.éix át (___) *áwé.*
xaadí
at kadíx'i
kayaaní
k'eikaxwéini
at x'aakeidí
tléigu

This is the plants ().

root
 stem
 leaf
 flower
 seed
 berry/fruit



Teacher Background Information

***Explain to students that you went out to gather plants to begin this exploration of plants. Tlingit people believe everything has a spirit. To show respect to the plant it is important to respect any plant's natural environment. When we go to observe plants and explore their environment we must leave it the way we found it. Explain that when the class goes out into the natural world we are only going to take what we need from the natural environment and as we do so thank the plants we will use in the classroom and for the nutrition they provide.

Kóox - Chocolate Lily, *Fritillaria camschatcensis*

Lovely to look at but very stinky. Flowers are chocolate brown to purple-black. Seeds are in capsules. Edible bulb is white and made up of rice like bulbettes,

K'wálx - Fiddlehead Fern **from the Shield Fern Family, Aspidiaceae**

Long stem with leaves in a triangular shape. Underground stem looks like a banana cluster. Spores in 2 rows on underside of leaflets.

S'íkshaldéen – **Hudson Bay or Labrador Tea**, *Ledum groenlandicum*

Leaves are aromatic when crushed. The undersides are wooly. White flowers in clusters at the top of stems.

Tséit – **Silverweed**, *Potentilla anserina*

Found in the river estuaries of salmon spawning streams. Identify them from their leaves. Travel/grow along on runners – like strawberries and also be identified by their yellow flower. Leaves are green on top and have a silvery underside.

S'áxt' - **Devils Club**, *Echinopanax horridum*

Spiny shrub with big green leaves and red berries in the fall. Use leather gloves when gathering and preparing. If you get stuck with a thorn DO NOT try to remove. It will fester in about 3 days and come out by itself. Used to make medicines and tea.

Yaana.eit - **Indian Celery or Cow Parsnip**, *Heracleum lanatum*

Look for these in meadows and open woods. Big leaves and hairy stems. The hairs on the stems may cause a rash. Handle with plastic gloves. Peel hairy skin off with a knife and eat the inner stalk.

T'óok' – **Nettle, Urtica**

Grow to 7 feet. Leaves and stem are covered with fine stinging hairs. Flowers grow in drooping clusters. Collected with gloves. Steam or dry before eating. If stung chew the leaf of a wild celery – yaana.eit and rub it onto the rash or according to Janice J. Schofield in her book *Discovering Wild Plants*, rub fresh nettles between gloved hands and then rub the crushed nettles on the stings. Pg 172.

X'unéil' ch'éeni – **Rose**, from the Rosaceae Family

K'inchéiyi – **Rosehips**. Pink flowers, smooth leaves, prickly stems with thorns. Fruits can be as small as marbles or the size of a small apple. If you get stuck with a thorn remove it with a needle.

X'áal' – **Skunk Cabbage or Swamp Cabbage**, *Lysichiton americanum*

Many small flowers on a fleshy spike surrounded by a bright yellow leaf. Big green leaves late in summer. Elders teach they are the first sign of spring. It is used like waxed paper and aluminum foil are used today. When using raw cut out the stem.



Activities

Activity #1 Reading about plants

Read the book *Plant Plumbing: An Introduction to Plant Parts* to the class.

Activity #2 Looking for plant parts

Bring into the classroom a whole plant (roots, stem, leaves, seeds or fruit, flowers) of the following plants: Chocolate Lilies, Fiddlehead Ferns, Labrador Tea, Silverweed, Devils Club, Indian Celery (or several different plants that will show these plant parts). Display them on a piece of butcher paper in your meeting area.

As you point to each part, ask students if they know the name of that part. Using English names, put a picture/word card next to the plant part as it is named. Then give the Lingít name for each plant part and put the picture/word card next to each part as you say the name. Let the students know that they will be using these names frequently during this unit.

After you have repeated the words several times with the class, press the plants between pieces of newsprint and weigh them down with books. Once the plants are dry, hang black butcher paper on the wall and mount the plants so students can make visual observations and explore each plant with magnifying glasses. Place plant labels in English and Lingít next to each plant.

Activity #3 What plants do you know?

Help students make a list of familiar plant names (fireweed, skunk cabbage, grass, flowers, dandelions, devil's club, nettles, blueberries, salmon berries, etc.). Ask if they have seen seeds from these plants and what they look like.

Ask where they have seen any of these plants.

Do all plants have each of the parts we learned in the previous activity?

Tell the students that in the next lessons they will explore all kinds of plants and how they grow.

Put the pressed plants and word/picture cards in an area of your classroom where you and your students can begin to make a Plant Center. Here are activity suggestions for making area into an activity center that can last throughout the unit:

- Plant Bingo, Concentration or Snap
- Build a Plant
- Planting seeds/caring for seeds and plants
- Vegetable printing
- Fern printing
- Real plants to observe
- Seed catalogs
- Flower/plant puzzles
- Photographs of plants from magazines and catalogues to make collages



Assessment

Using a list of plant parts, ask individual children to identify parts of a plant and record their responses.

Ask individual students to say the names of the plant parts in Lingít and record their responses. Add these words to the growing list of Lingít vocabulary words mastered and used by each student.

Reference Materials and Websites

Teacher References:

- *Gathering What the Great Nature Provided: Food Traditions of the Gitksan*, by the People of 'Ksan, University of Washington Press, ISBN 0-88894-249-4.
- *Discovering Wild Plants: Alaska, Western Canada, The Northwest*, by Janice J. Schofield, GTE Discovery Publications, Inc., ISBN 0-88240-369-9.
- Plant growing cycle video showing time lapsed photography – “How do plants grow from seed to flower?”- [http://www.teachersdomain.org/k-2/sci/life/cycle/lp_plant cycle/index.html](http://www.teachersdomain.org/k-2/sci/life/cycle/lp_plant%20cycle/index.html)

Student References

- *Seed to Plant*, by Gail Gibbons, Holiday House, 1993, ISBN #0823410250.
- *Fly Traps – Plants that Bite Back: Read and Wonder*, by Martin Jenkins and David Parkings, Walker Books, 2001, ISBN #07445627440.
- *DK Eyewitness Guide: Plant*, by David Burnie, Penguin Books Ltd, 1989, ISBN #0863183689.

Optional Extension Activities

- Display sample plants from “Build a Plant” patterns (included in Resources) in the Plant Center.
- Provide 9” x 12” construction paper to glue the plant parts on. Display student original designs/arrangements of plant parts.

Lesson #2

How Does a Seed Grow?

Objectives

Students:

- Observe lima beans that have been soaked in water overnight
- Identify the parts of a seed
- Learn the names for these parts in English and Lingít.

Time

45 minutes

Materials

- Large lima beans
- Recording sheet
- Inside a Seed labeling sheet
- Seeds from indian celery, rosehips or other native plants



Vocabulary

Lingít

kayaaní k'atsk'u

a tuyadi

at x'aakeidí daakanóox'u

du x'ashagóon

at x'aakeidí kakél

at x'aakeidí kaxúk

English

little plant

embryo

seed coat

stored food

soaked seed

dry seed

Lingít Phrases

At x'aakeidix' kagaxtooltín.

Wé at x'aakeidí yan kalatín.

Nakaa wé at x'aakeidíx.

Wooshdáx nawaal' at x'aakeidí.

Heentaax' yei na.oo wé atx'aakeidí.

Let's look at seeds!

Look at the seed.

Measure the seed.

Split/Break the seed in half.

Put the seed in water.

Activities

Activity #1

Looking inside a seed

Teacher Preparation

Soak half a bag of lima beans overnight. Look for and gather some seeds from native plants. Traditionally, Tlingit children gathered indian celery seeds to make "pretend food" for their play houses.

Activity

Follow the procedure for distributing lima bean seeds, observing and describing the seed, discussing, measuring and recording as stated on the student worksheets (see Resources). Students will be looking for the embryo hidden inside the lima bean, drawing and labeling their observations.

Assessment

Ask each student to show you the embryo inside the seed and record on a checklist if he/she has correctly identified the embryo. Ask each student to show you the stored food for the seed and record their responses.





Lesson #3 A Seed Grows

Objectives

Students:

- Predict how long it will take a bean to sprout
- Observe that beans have roots that grow toward the floor and stems that grow toward the sky
- Predict and record how many days it will take for the first leaves to appear
- Predict how long the cotyledons (food supply for the young plant) will remain on the plant before falling off

Time

45 minutes, followed by on-going daily observations and recording on worksheets

Materials

- *One Bean* by Anne Rockwell, Walker Books for Young Readers, 1999, ISBN#0802775721
- Lima beans
- Ziplock type baggies
- Paper towels
- A Seed Grows worksheets

Vocabulary

Lingít

xaat

a kadix'i

at shaadí

English

root

stem

sprout

Lingít Phrases

X'oon sá yatee wé at x'aakeidí?

Haa at x'aakeidíd e gaxtulatéen.

Gwatgeen sá á kayaaní kakgwa.aa?

Gwatgeen sá a xaadí kakgwa.aa?

Gaxtookaa a kadix'i ch'a tlákw yageeyí.

Gaxtookaa a xaadí ch'a tlákw yageeyí.

How many seeds are there?

We'll watch our seed grow.

When will the leaves grow?

When will the roots grow?

We'll measure the stem everyday.

We'll measure the roots everyday.

Activities

Activity #1

Learning about growth cycles

Read *One Bean* by Anne Rockwell to the class. This book describes the growth cycle of a bean sprout on a wet paper towel as it continued growth in to a cup.



Activity # 2 A seed grows

Help your students tape a lima bean in a ziplock type baggie and make predictions about which part will appear first: the root or the stem. Use the worksheets (see Resources) to record student predictions, make a drawing of seed growth, and record measurements of the stem and root.

Activity #2 Watching a seed grow

Have students continue daily observations of seed growth, measuring and graphing their results on the worksheet. Every few days ask them to draw what they are observing.

Assessment

Ask each student to describe the growth of the roots and the stem. Check each student's understanding and whether he/she has correctly graphed a seed's growth on the proper worksheet.

Reference Materials and Websites

- Plant growing cycle video showing time lapsed photography – “How do plants grow from seed to flower?”
http://www.teachersdomain.org/k-2/sci/life/cycle/lp_plant_cycle/index.html

Optional Extension Activities

Provide time for students to go to the classroom Plant Center to use plant puzzles, look at plant books and observe seeds and plants with magnifying lenses.

Lesson #4 A Plant Begins

Objectives

Students:

- Learn the steps in planting seeds.
- Recognize what a seed needs to grow

Time

45 minutes, followed by time for on-going observation and recording in a daily log

Materials

- *How a Seed Grows*, by Helene J. Jordan, HarperTrophy, 1992, ISBN#0064451070
- Seeds (lima, corn, or radish)
- Potting soil in a dishpan sized plastic tub
- A Plant Begins booklet, copied and assembled for each student
- Styrofoam cups, plastic pots or milk cartons



Vocabulary

Lingít

k'wátł
kútl'kw
x'úx'
at shaadí

English

pot
potting soil
book
sprout

Lingít Phrases

K'wátłx' i kaa yei na.oo wé kútl'kw.

Put the soil in the pot.

Kanaháa wé átx'aakeidí.

Plant the seeds.

Ch'a tlaakw kanaltl'ák'x wé kútl'kw.

Keep the soil moist.

I yei jinéiyi kayshaxít i x'úx'u kaa yei na.oo. Record your observations in your book.

Activities

Activity #1

A plant begins

Teacher Preparation:

Before class, display the planting directions in the classroom Plant Center on a piece of chart paper. Have a large tub of potting soil and containers for planting seeds ready.

Activity:

In the meeting area, show students how to plant seeds in soil using one container. Show them how much water to add to make the soil moist. Have each student put his/her name on a cup. Then ask small groups of students to begin to plant their seeds. Help each group as they proceed with the process of planting. Make a central center/area for storing the planted seeds in order to avoid spilling soil and water on the floor or student's desks/tables.)

Activity #2

Making a plant begins booklets

When everyone has planted seeds, give each student one copy of the A Plant Begins booklet. Model your expectations for drawing and writing observations in front of the class. Tell them they will all make a daily log of their seed's growth. Make time each day for students to draw and write their observations. Post the list of plant words near to help beginning writers.

Assessment

Check daily log booklets of drawings and writing of observations for each student's understanding of how seeds grow and to see if he/she completes the assignment. Also check for any grammatical details you have introduced for children to practice in these booklets.

Reference Materials and Websites

- *Frog and Toad Together*, by Arnold Lobel, HarperFestival, 1999, ISBN #069401298X

Optional Extension Activities

This would be a good time to make a plan for a garden near your classroom. Choose fast-growing seeds like radish and lettuce. Plant seeds in the garden and watch them grow. Initiate a class mural where students can draw what they see in the garden and its surroundings.



Lesson #5 Ferns Have Special Seeds

Objectives

Students:

- Observe spores on fern leaves and record their observations on a record worksheet
- Recognize Fiddlehead Fern plants on a field trip
- Learn how to prepare fiddleheads for eating

Time

- 30 minutes to examine fern fronds and record observations on worksheet
- One hour for field trip
- 30 minutes to clean, steam and eat fiddleheads

Materials

- Magnifying glasses
- Shovel to dig fern plant
- 3-4 fiddleheads for each student
- Box or plastic bag to transport fern plant to your classroom
- Hose (outside) or tub of water (inside) to clean the fern rhizome
- Plastic knives to clean brown flakes from fiddleheads
- Salt, butter or margarine
- Cooking pot
- Paper plates to serve fiddleheads
- Steamed fiddlehead recipe

Vocabulary

Lingít

k'wálx

k'wálx xaadi

k'wálx kayaaní

k'wálx shá

shkaxéeni

kei kayhaa

kutl'ídaa

na.óos'

kalakásh

éil'

gwáata

English

fern w/ edible roots

fern roots

fern frond

fiddlehead

spores

dig up

shovel

wash

cook (steam)

salt

butter

Lingít Phrases

K'wálx x'aakeidí a shakaxéeni yei duwasáakw.

Wé shakaxéeni gé a káx kukgeeshee?

K'wálx agaa kugaxtooshée.

K'wálx kei kagatoosahaa.

K'wálxshá gatoos.een.

K'wálxshá na_x too.óos'.

K'wálxshá ka_xlakásh.

K'wálxshá ga_xtoo_xaa.

At xá.

Ferns have seeds called spores.

Can you find the spores?

Let's look for ferns.

Let's dig up a fern plant.

Let's pick fiddleheads.

Let's wash fiddleheads.

Let's steam fiddleheads.

Let's eat fiddleheads.

Eat.



Activities

Activity #1

Let's look for a fern plant

Before class, find an area where fern plants are growing.

Talk with your students about ferns having delicious fiddleheads and rhizomes. Ask if anyone has eaten fiddleheads before. Let them know that the rhizome is not often eaten now, but traditionally, people roasted it in an outdoor cooking pit. Here is a description of roasting fern roots from *The Subsistence Lifeway of the Tlingit People*, by Richard Newton and Madonna Moss:

“Right along with planting the garden, we dug k’wálx (fern roots). All the dirt was scrubbed off – if you had a brush this was fine. It needed a lot of cleaning and washing over and over. They were split in half, cut into even smaller pieces, put into a large pit and boiled until cooked.”

Take your students with an Elder/Culture Bearer to dig up whole fern plants– fiddleheads, fern fronds and rhizome. Pick enough fiddleheads for each student to have 3-4 to observe, cook and eat. Pick enough fern fronds for each pair of students to observe and draw when they return to the classroom.

Transport plant and plant parts back to school. Wash the rhizome, and put it in a the plant center for students to observe.

Activity #2

Where Are the Special Seeds?

Using a fern frond and a magnifying glass, show your students how to find the special seeds, called spores, on fern leaves.

Fern spore cases are easier to see when they turn brown in late summer or fall. In the spring, students will be able to see small green bumps which will become the spore cases. You may want to repeat this activity in the fall.

Have pairs of students examine fern leaves to find the spore cases and record their observations on their Fern Frond worksheet.

Activity #3

Let's cook fiddleheads

With a plastic knife, demonstrate how to scrape the brown flakes from a fiddlehead. Have students clean their fiddleheads.

Put them in a pot with a little salt and water. Steam the fiddleheads until they are soft, drain the water and season with a little butter or margarine. Serve on paper plates. Put the recipe for preparing fiddleheads in the My Plant Recipes book.

Our expectation is that children will be respectful even when trying new foods. When Tlingit people gather things from the land they show respect to ensure a plentiful return of that food next year. Model respectful words that can be used to describe the plant, like: Delicious, Really good, I like it, etc. If students don't like this food, they could say, "Thank you for letting me try it" without saying anything more.



Assessment

Observe student's skill of listening respectfully to an Elder/Culture-Bearer.
Check students' worksheets for understanding that spores are special seeds found on fern leaves and that ferns grow from rhizomes.

Optional Extension Activities

Help your students look closely at the fern rhizome to see the small fiddlehead sprouts emerging. Find a shady, moist area around your school where you can plant a fern rhizome. Plant a fern.

Make fern prints. You will need a piece of screen, an embroidery hoop to make a frame for the screen, and an old toothbrush. Put a section of a fern frond on a white paper. Holding the screen above the fern frond, dip the toothbrush into tempera paint and brush on the screen. Tiny drops of paint will fall everywhere but under the fern, making a negative print. Remove the fern carefully and let the print dry.

If you can do this print activity outdoors, use a spray bottle with diluted tempera paint instead of a screen and toothbrush.

Have students create their own plant illustrations for their Plant Recipe Book cover.

Lesson #6

Let's Look at Plant Roots

Objectives

Students:

- Recognize plants with tap roots and plants with fibrous roots

Time

45 minutes

Materials

- Variety of roots, such as onion, carrot, turnip, grass, dandelions
- A sweet potato to grow in the classroom
- Root Study Worksheet
- Calendar
- Graph paper to make a class chart/graph



Vocabulary

Lingít

tsáats
k'ika xaadí
s'ú
tséit
yéiltáxi
s'in
t'l'aadéin aa

English

Indian potato
tap roots (fat roots)
fibrous roots (thin roots)
sweet potato
onion
carrot
turnip

Lingít Phrases

Wé xaat yaháayi kayshaxít.
Nakaa wé xaat.

Draw the root.
Measure the root.

Activities

Activity # 1 Root study

Teacher Background Information:

Before class, collect several examples of roots that are taproots (carrots, green onion, turnip, parsnip, radish, sweet potato), and examples of fibrous roots (beach grass, dandelions, most weeds).

Activity:

Using the teacher information in the resources, give students basic information about plant roots. Display and discuss the two kinds of roots - taproots and fibrous roots. Have students choose a root from your samples to study and record the information on the Root Study worksheet.

Activity # 2 Grow a sweet potato

Place a potato in a clean glass with water. Place it in a sunny window and watch it grow. Put a page from your calendar near the plant to record when the roots and the first leaves appear. Chart or graph the sweet potato growth.

Activity # 3 Finding and preparing tséit (wild sweet potato)

Ask the Elders/Culture Bearers where to find a good place to dig tséit in your area. Take a field trip to dig tséit. Richard Newton tells us in his book, *The Subsistence Lifeway of the Tlingit People*, "The best tséit are dug at the entrance of rivers and fish creeks - where the sun hits the area- they are sweeter in a sunny area." Here is how Richard Newton and Henry Katasse describe gathering tséit:

"The dead leaves are usually laying on top of the ground when tséit are dug - usually as soon as the snow melts in the month of March - before the plants start growing...this is when they are tasty and sweet."



William Nelson, in Richard Newton's book, also tells about digging tséit:

"Tséit is picked in the spring while tender, in April and May. They are found and dug near flats – you identify them from their leaves. Digging is tedious, one root at a time, then put into a container like a water pail. When this is filled, they are washed in fresh water four or five times."

Lesson #7 Let's Look at Plant Stems

Objectives

Students:

- Learn how stems are necessary to plants
- Recognize Devil's Club as an important Tlingit medicinal plant that can also be used to purify household air

Time

30 minutes for walk outside to observe and discuss plants with stems

30 minutes—Activity #1

Materials

- Stem study worksheet
- Flower in Water worksheet
- Wild Celery and Devil's Club Study Prints
- Plants with different kinds of stems (celery, rhubarb, asparagus, broccoli)
- Celery stalk: 1 per student
- Food coloring
- Plastic cups
- Leather gloves to gather Devil's Club
- Garden clippers or a hatchet to cut a Devil's Club stem
- Rubber gloves

Vocabulary

Lingít

at kadix

a tóo náx héen naadanyíár

tukatási

tl'aak'wách'

súkkadzi

aas k'eikaxwein

s'áxt'

a daakak'áts'i looní

at lách'i

xáas'

a daaka.ádi

satá

k'wátl

k'eikaxwéin

kawóot

English

stem

tubes

celery

rhubarb

asparagus

broccoli

Devil's Club

thorny outer bark

green inner bark – cambium layer

scrape

peel/strip

boil

pot

flower

beads



Lingít Phrases

Wé at kadix'i aax naxash.

A daa ka.k'ats'i looní aax xáas'.

A daa ka.ádxich at láx'j naxash.

A daa ka.ádi satá.

Wooyin gax laxaak.

Cut the stem.

Scrape the outer bark.

Cut the green inner bark into strips.

Boil the strips.

Clean the air.

Activity #1

Let's gather Wild Celery and Devil's Club

Teacher Preparation:

Locate an area nearby where you can find Devil's Club and Wild celery. Make logistical arrangements to take the class on a field trip to observe and gather these plants.

Yaana.eit

**** Be aware that some people have an allergy to the furry hairs on the outer skin of this plant that may cause blisters. If you want to sample this plant, handle the plant stems with disposable rubber gloves. Peel the stems with a butter knife. Once the skin is peeled, the plant can be eaten raw and is delicious.*

Activity:

Divide the class in half, to gather two stem plants - Devil's Club and Wild Celery. Using pictures of Devil's Club and Wild Celery, talk with students about traditional Tlingit uses for the stems of these plants. Arrange for extra help from Elders and Culture Bearers, parents and friends during this field trip.

Take a field trip to observe, discuss and gather Devil's Club. Be sure to take heavy gloves for the person who will do the cutting. (A small branch can be cut with garden clippers. A larger branch will need a small hatchet.) Gather the class around you to observe the plant in the wild. Talk about its features. Ask the children if they know the plant and have had any prior experience with it. Ask them why it might be necessary to wear gloves to handle this plant.

Using gloves, scrape the brown, thorny outer covering off a section of the stem with a knife or small hatchet. Explain to students that adults also use Devil's Club inner bark as a medicine. Gather several samples of Devil's Club bark to take back to class. Then find some Wild Celery. Discuss how it is alike and how it is different from the Devil's Club. Collect a few samples of the stem to take back to the classroom.

After the class returns to school ask the children to draw what they observed in their plant notebook, and to fill in the worksheet about Devil's Club. On the board, make two columns and ask students to use words that describe the Wild Celery and words that describe the Devil's Club. Record what they say in the appropriate column and then talk about what is alike and what is different.






Activity #2

Making air purifier with Devil's Club

Strip the green cambium layer off the Devil's Club stem. Continue scraping and stripping off several sections of the stem. Put the green inner bark strips in a cooking pot with some water. Boil the strips in your classroom until the room smells wonderfully fresh. Tlingit families like to do this when someone in the family is recovering from a cold to freshen and purify the air. Put the air freshener recipe in students' Plant Recipe Book.





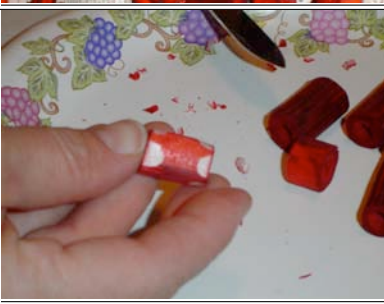



Let's Gather Devil's Club and Make Air Freshener

<p>1. Locate and thank the Devil's Club.</p>	
<p>2. Cut the stem at the base.</p>	
<p>3. Using the backside of a butter knife scrape the brown outer bark and needles off.</p>	
<p>4. Have an adult cut the green cambium layer from the stalk. This part is what is used to make, medicine, tea, and air freshener.</p>	
<p>5. To make air freshener put cambium layer in a pot with water, bring to a boil and let simmer.</p>	



Activity #3 Make Devil's Club Stem Beads

	<p>1. Cut beads to desired size.</p>
	<p>2. Use a nail or drill bit to clean out the soft center of the stem. Scrape the entire center out to make it hollow.</p> 
	<p>3. Dye or decorate beads with permanent markers.</p>
	<p>4. Beads can be faceted by cutting the edges at an angle, be creative with your design and have fun!</p>
	<p>5. String beads onto jute or hemp.</p>



Assessment

Review individual student worksheets to check understanding that stems are tubes that bring water and nutrients to the leaves of the plant.

Ask individual students to tell you about the process of gathering and preparing Wild Celery and Devil's Club. Record their responses.

Optional Extension Activities

Stem Study

Collect stems that are familiar to students as food they eat - such as celery, broccoli, asparagus, and rhubarb. Gather some Devil's Club to add to your collection.

Give each student a celery stalk. Have student's describe their celery stalk. List their descriptions on a giant celery shaped chart drawn on the board or chart paper. Continue to follow the procedures in the teacher's guide for an experiment that shows how a stem carries water to the leaves. Record observations on the Stems worksheet.

Flower in Water

Set up the Flower in Water experiment:

- Put a flower in a plastic glass of colored water
- Have students predict what they think will happen to the flower overnight
- Students record the experiment results the next day on the Flower in Water worksheet

Lesson #8

Observe a Leaf

Objectives

Students:

- Observe, draw and describe a leaf
- Recognize that there are many kinds of leaves
- Compare, measure and describe leaves
- Understand that Labrador Tea leaves make a nutritious drink

Time

45 minutes

Materials

- Observe a Leaf worksheet
- Magnifying glasses
- Leaf collecting bags
- Loops of colored yarn to group leaves
- Chart paper for a language experience chart
- Leaf Tour Guide worksheets, 1 and 2
- Cooking pot for tea-making
- Honey
- Styrofoam cups



Vocabulary

Lingít

kayaaní
at xá.
took'
cháayu
kayaaní téet'i
kaawax'il'
kasix'áx
yayát'
yei koosáa
yawúx'u aa
yei kawdliiyáat'
gítgaa
kayaaní wán k'áts'

English

green leaves
 food
 nettles
 tea
 veins in the leaves
 smooth
 rough
 long
 narrow
 wide
 short
 needle – like leaves
 jagged edges

Lingít Phrases

Ka.éix.át ch'a has du at xaayi yei s adané.
Ka.éix.át kayaaní tooxa
Lettuce kayaaní tooxá
Spinach kayaaní tooxá
Cabbage kayaaní tooxá
T'óok' tooxá
Kayaaní cháayu yax toolook.

Plants make their own food.
 We eat plant leaves.
 We eat lettuce.
 We eat spinach.
 We eat cabbage.
 We eat nettles.
 We make tea from leaves.

Activities

Teacher Preparation:

Make logistical arrangements for a local field trip, a “leaf exploration tour”.

Activity #1

Observe a leaf on tour

Take your class on a guided “leaf exploration tour” and let students find and pick up a special leaf of their own to study. Direct students to closely observe the leaves they find. After a period of time gather the class together and take some time to talk about student observations. Then ask students to record some of the information they learned in their tour guide.

Activity #2

Leaf exploration tour

After they have recorded leaf information, give each child a leaf collecting bag. Tell them to gather up to 8 leaves in their bag, which they will bring back to the classroom. Remind them of the traditional tribal value of respect for nature as they are gathering their leaves.

Once back in the classroom, have each student complete the Leaf Explorations worksheets. Discuss leaf likenesses and differences with the class, asking them questions about relative colors, sizes, shapes, textures and smells.

Make a language experience chart of descriptive words generated by the children. (Example: Andrew’s leaf is small and has jagged edges. Becky’s leaf is large, yellow and has a fat stem.)



Activity #3 Let's gather Labrador Tea

Teacher Preparation:

Ask an Elder/Culture Bearer about good local places to pick Labrador Tea. Labrador Tea grows in wet, swampy places.

Make logistical arrangements to go on a field trip, inviting an Elder/Culture Bearer and parents to accompany the class. Students will need boots if your gathering area is wet.

Activity:

Prior to going on a field trip to gather leaves from the Labrador Tea plant remind students of the Tlingit way to show respect to natural resources. Give each student a plastic bag for collecting the leaves. Show them how to crush some leaves to smell the pungent odor as they are picking some leaves. Tell them the best leaves are those that do not have too many red or brown spots on them.

Take the leaves back to the classroom. Put them in a cooking pot with water and bring it to a boil. Let the leaves steep for about 15 minutes, and then let it cool to a lukewarm temperature.

Pour a cup of tea for each student, Elder/Culture Bearer and parent. Serve with a spoon of honey. As the class is having this "tea party" ask the Elders/Culture Bearers to share any stories they remember about picking or drinking Labrador Tea in the past. Add the tea recipe to student My Plant Recipe Book.

Optional Extension Activities

Make a Leaf Picture (You'll need help with the ironing)

Arrange the leaves gathered by students on sheets of waxed paper. Cover each with a top sheet of waxed paper. Put these between two sheets of newspaper and press with a warm iron to seal them together. Place in a construction paper frame and have students take home to share with their families.

Explore Different Types of Tea

Talk with your students about other kinds of tea made with plant leaves. There are local plants in Southeast Alaska that can make very nice tea. Try fireweed leaves and chamomile leaves for example.

Lesson #9 Observing Bulbs

Objectives

Students:

- Recognize that some plants reproduce from bulbs
- Learn that a bulb stores food for a growing plant
- Discover that Chocolate Lily grows from a bulb with rice-like bulbs that Tlingits gather and cook

Time

45 minutes



Materials

- Onion and garlic bulbs
- Plastic cups
- Potting soil

Vocabulary

Lingít

kóox

tukaxaadí

kóox yáx x'aakeidí

si.aaxu yeiltáxí tukaxaadí

yeiltáxí tukaxaadí

k'eikaxwéin tukayádi

English

chocolate lily (Indian Rice)

bulb/rhizome

bulblets (rice-like kernels)

garlic bulbs

onion bulbs

flower bulbs

Lingít Phrases

Ax tukaxaadí () yáx at wayaa.

Ax tukaxaadí () yáx asineex'.

Ax tukaxaadí. () yáx jee dinook.

Kóox k'eikaxwéin iságwaat yáx yatee.

Kóox tukaxaadí x sitee.

Gaxtoosa.ee kóox.

My bulb looks like

My bulb smells like

My bulb feels like ...

A Chocolate Lily has a brown flower.

The Chocolate Lily has a bulb.

We can cook the rice.

Activities

Activity #1

Observing bulbs

Provide enough onion, garlic or narcissus bulbs so students can see and handle at least one bulb. Help children observe and describe their bulbs and record their observations on the worksheet (see Resources).

Activity #2

Gathering Chocolate Lily (Indian Rice)

Teacher Preparation:

Ask an Elder/Culture Bearer to help you find a good local place to gather Chocolate Lilies.

***The best time to gather the bulb for eating is early spring or fall, before the plant blossoms.*

Activity:

Since you identify this plant by the chocolate-colored blossoms, you may want take students on a field trip in the spring to identify the chocolate flower and observe the leaves – the leaves grow in groups of five up the stem. Take another field trip in the fall to gather the rice bulbs. Soak and rinse the bulbs 3-5 times. Cook and eat the kernels as a soup.



Assessment

Check student worksheets for to see how they use sensory words to describe different bulbs.

Ask students to tell you about gathering Chocolate Lily plants. Do they understand that the bulb is food storage for the plant?

Optional Extension Activities

Plant a Bulb

Set up a place to plant bulbs in the Plant Center with a tub of potting soil, plastic cups and bulbs. You can plant spring bulbs like daffodils, tulips and narcissus as well as onions and garlic. Check with local gardening people to get bulbs, or order on the Internet. Help each child plant a bulb, keeping it well watered until it blooms.

Lesson #10

Many Plants Have Flowers

Objectives

Students:

- Learn that flowers produce seeds which help plants reproduce
- Learn the main parts of a flower
- Find the stamens, pollen and pistil in a wild rose, daisy, carnation, or chrysanthemum.

Time

60 minutes

Materials

- One flower per student
- Magnifying lenses
- 1 8x 10 piece of contact paper per student or spray glue
- Colored construction paper pre-cut to act as frames for the 8 x 10 contact paper
- Crayons
- Watercolors or tempera paints, enough for each student to paint with
- Flower Observation Worksheet
- Butcher paper or chartpack paper for graphing

Vocabulary

Lingít

k'eikaxwéin
leixwen yádi
a shakayaaní
a kadanjayí
tléikw
at x'aakeidí
gandaas'aají
ts'ítskw
tleilóo

English

flower
petals
sepal
pollen
fruit/berry
seeds
bees
birds
butterfly



Lingít Phrases

K'eikaxwéin daa.átk'i kugaxtushee.

() agaa anayeelgéin.

Léixwen yádi kax kuxwashee.

A shakayaaní kax kuxwashee.

A kadanjayí kax kuxwashee.

Lets find the parts of a flower.

Look for ().

I found the petals.

I found the sepal.

I found the pollen.

Activities

Activity #1

Looking at a flower

Teacher Preparation:

Collect enough flowers for each student to have at least one. Also bring in other flowers that have different numbers of petals.

Activity:

Have students study their flowers with a magnifying lens and record what they see/observe on their Flower Observations worksheet. Ask each student to count the number of petals his/her flower has and remember that number. Model how students can count the number of petals in English and in Tlingit.

Direct students to take apart their flowers and put the pieces on contact paper. They may want to arrange them in a certain way, to create balance or to highlight one part of the flower. After they have arranged them, help students to add a colored paper frame to the contact paper.

Ask students to hang their flower pictures in the windows of the classroom. After all flower pictures are hung, gather the students together to make an all-class wall graph. Ask each student to tell how many petals his/her flower had and record this information on the class graph. Which flowers tend to have the most petals? Which has the fewest?

Activity #2

Create some flowers

Direct students to a paint flowers, using watercolors or tempera paints. Their paintings must include stem, leaves, and flower.

Put newspapers on tables, paint boxes or blocks with water containers and brushes in the center of each table. For the best results, use white construction paper instead of copy paper. Ask children to paint flowers they have seen and flowers from their imagination. Circulate through the classroom commenting on the number of petals that children are adding and the colors they use to paint their flowers. Note how they handle brushes and paint supplies and give them any tips to help them paint effectively. Students can cut out their flowers to make a flower display.



Assessment

Using a drawing or picture, ask each student to point out flower parts: stamen, pollen and pistil, and record their responses. Repeat this simple assessment until all students can identify these parts successfully. Ask each student to count the number of petals their flower has in English and Lingít.

Reference Materials and Websites

- *Buzzing A Hive*, GEMS, Lawrence Hall of Science, University of California at Berkeley, ISBN: 0-912511-12-5. This is a great unit for Preschool and Kindergarten children for learning about bees and their role in pollination of flowers....highly recommended.

Optional Extension Activities

Interviews

Interview a local gardener (or parent who likes to garden) or nursery worker to learn about bees. Help students prepare for this interview. Do a KWL chart to record things they know and what they want to know about bees. Use this chart to help ask the visitor questions. After the visit, have the class write a thank you letter listing some of what they learned about bees and flowers.

Lesson #11

Let's Make Rosehip Tea

Objectives

Students:

- Observe rosehips as the fruiting part of the rose flower
- Learn that rosehips contain seeds that reproduce new plants
- Recognize that rosehips are a nutritious source of Vitamin C and are used by Tlingit people to stay healthy

Time

60 minutes

Materials

- Picture of flower parts
- Sitka Rose study prints
- Ziplock bags, one for each student
- Scissors for each child to cut rosehips
- Plastic knives and cutting board
- Cooking pot
- Hot plate
- Styrofoam cups
- Strainer to remove rosehips from the tea water
- Honey



Vocabulary

Lingít

x'unéil' was'i
x'unéil' tléin was'i
k'inchéiyi
tléikw
at x'aakeidí
a daakak'ats'i
gandaas'aají háat'i
héen ksadóok

English

wild rose bush (small rosehips)
 sitka rose bush (large rosehips)
 rosehips
 fruit/berry
 seeds
 thorn
 honey
 healthy drink

Lingít Phrases

K'inchéiyi xa.een
A daakak'ats'i yak'ik'áts'.
Ax dat áyá uwdigich.
X'oon k'inchéiyi sá i jeewi?
() ax jeewu.
K'inchéiyi chaayú ax x'éi yak'éi.
Kunax x'eigak dinook!

I am picking rosehips.
 It's sharp.
 Ouch! I got poked!
 How many rosehips do you have?
 I have ____ 1, 2, 3, etc.
 I like rosehip tea.
 It's delicious!

Activities

Activity #1 What is a rosehip?

Show students the picture of a rose flower you have drawn. Ask them if they can remember the names of some of the flower parts. Point to the parts as the children recall the names. Tell the class they will pick some rosehips, boil them and make a delicious, healthy tea. Ask if anyone takes a daily vitamin and let them know that Vitamin C helps us stay healthy. Rosehip tea also contains Vitamin C and was one way that many Tlingit people stay healthy.

Activity #2 Picking rosehips

Teacher Preparation:

Locate a rosehip bush or two in close proximity to the school. Make the logistical arrangements to take the class on a walking field trip. Remind children about proper etiquette and behavior for walking field trips.

Activity:

Give each student a ziplock bag to pick a few rosehips. Caution them about rose bush thorns and how they must be careful not to get hurt by thorns. Direct them to take turns and use a scissors to cut the rose hips.

Practice counting in Lingít and English as students put several rosehips in their bags.

Activity #3 Let's make rosehip tea

Once back in the classroom, have students empty their bags of rosehips on a table. If there are still stems, there may still be thorns. Cut off stems and brown sepals with scissors.



Use plastic knives to cut the rosehips into small pieces, as children watch and comment on what the rosehips look like, smell like, how they are different than other leaves/flowers used for making tea.

Put the cut up pieces in a cooking pot with water and boil for 2-3 minutes. Then strain the rosehips from the tea water. Add a little lemon juice and honey to your taste. Pour into styrofoam cups.

*** Caution:** *Let the tea cool a bit in case a child spills the tea!*

Write a recipe for making rosehip tea with your students to put in their *My Plant* Recipe Book.

Assessment

Ask each child to show you the seeds in the rosehip and tell you why they are important for the plant.

Ask students to tell you how to make rosehip tea.

Optional Extension Activities

Make rosehip tea for students in another classroom, or for a parent/family gathering.



