

# Keishísh ka Dúk

# Alder & Cottonwood

**Grade Levels 2-3**



## **Tlingit Cultural Significance**

Generations of Alaska Native people have grown up in the amazing ecosystem in Southeast Alaska. In this unit students learn more about an important treasure of the region - the forests- and how trees fit into this ecosystem. Trees, forests, and the plants and animals that depend on this complicated and delicate ecosystem are of prime importance to Tlingit people. Forests supply everything from berries on bushes, to wood for houses and fires. They provided materials for tools that made it possible for people to harvest and further use this valuable resource. Alder and cottonwood trees are the focus of this unit – other units feature spruce, cedar and hemlock.

As residents of the lush rainforests of Southeast Alaska, Tlingit people were in touch with the land, plants and animals that share this home. They strived to live in harmony with the land. Nowadays, we have steadily increasing populations, massive increases in tourism and more demand for products from the land and seas. We, and the generations to follow, need to understand the complexities of this ecosystem to ensure resources are sustained not only for our children, but for our children's children, and for centuries to come. Students must be informed stewards of this beautiful land, understanding how important trees are to our people.

## **Elder/Culture Bearer Role**

Elders can enrich this unit with their cultural knowledge about:

- Cultural values, as Elders share knowledge of *aas káawu*
- Traditional uses of the forest, and its resources
- Talented artisans, i.e. weavers, carvers, boat builders, tool makers
- Tlingit clan structure and matrilineal society
- Legends, especially about Southeast animals, forests and trees
- Gathering and preserving food from the land: roots, berries, seeds

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](http://sealaskaheritage.org).





## Overview

In this unit students learn about alder and cottonwood trees, an important resource to the Tlingit.

In **Lesson #1** students listen and respond to the story *The Giving Tree* by Shel Silverstein. They learn what a tree needs to grow, what resources a tree offers and how these relate to the tree in the story. They also discuss how to be respectful to trees and plants.

In **Lesson #2** students observe nature while on a walk to collect leaves. They then write leaf descriptions of in English and Lingít, and learn basic ‘tree’ words, such as leaves, trunk, branches. Students learn how to count a tree’s rings in order to calculate its age.

In **Lesson #3** students use the scientific skill of observation, and traditional value of reverence for the land to watch an alder/cottonwood tree over the course of all four seasons. (Lesson continues all year.)

In **Lesson #4** students work on observing/studying the unique qualities of trees of southeast Alaska and then using this knowledge tell different trees apart. Students also learn the process of photosynthesis.

In **Lesson #5** students have a chance to relate their family to the trees of Southeast Alaska. For just like trees, which depend heavily on their roots to keep them alive, so did we as the people of Southeast Alaska rely on our families, or our “roots.”

In **Lesson #6** students have fun playing games, and learn more about the role alder/cottonwood trees play in a balanced ecosystem. They do a blind folded activity outside, exercise their sense of touch in the mystery box activity and play a game of alder/cottonwood bingo.

In **Lesson #7** students experience first hand the miracle of life as a seed transforms into a plant.

## Alaska State Standards

### Cultural Standards

A4) Practice traditional responsibilities to surrounding environment

B2) Make effective use of knowledge, skills and ways of knowing from their own cultural traditions

B3) Make appropriate choices regarding long-term consequences of actions

E1) Recognize and build upon the inter-relationships that exist among the spiritual, natural and human realms in the world

E2) Understand the ecology and geography of the bioregion they inhabit

E8) Identify and appreciate who they are and their place in the world



## Language Arts

- A1) Apply elements of effective writing and speaking
- A6) Use visual techniques to communicate ideas
- B1) Comprehend meaning from written text, oral and visual information by applying a variety of reading, listening and viewing strategies
- D1) Develop a position by reflecting on personal experiences, formulating questions, identifying sources of information, analyzing information
- E4) Recognize communication styles of different cultures

## Science

- A4) Understand observable natural events, such as seasons
- A12) Distinguish patterns of similarity and differences in the living world
- A15) Use science to understand and describe the local environment
- B1) Use the process of science including observing, classifying, measuring, interpreting data, hypothesizing, predicting, experimenting

## Geography

- C3) Recognize concepts used in studying environments and the diversity and productivity of different regional environments

## Mathematics

- A4) Represent, analyze and use mathematical patterns
- A5) Construct, draw, measure, compare, visualize, classify relationships among geometric figures

## Lesson #1

### What Trees Give Us

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#### Objectives

Students:

- Are introduced to the life cycle of a tree, in this case an apple tree
- Learn what resources come from trees
- Learn to be respectful of the *aas káawu*
- Learn what it takes to make a plant/tree grow
- Learn to speak Lingit target vocabulary words and phrases

#### Time

45 minutes - 1 hour



## Materials

- A copy of the book *The Giving Tree* by Shel Silverstein.
- Pictures of the following vocabulary words: alder tree, cottonwood tree, apple tree, evergreen tree, water, soil, sun, forest, tree stump, rain
- A plant that can grow in the classroom- preferably a small alder /cottonwood tree
- Worksheet WHAT A PLANT NEEDS (Draw a plant...)
- Worksheet WHAT PLANTS NEED (Visual organizer with 4 circles)
- Tree shaped WORD SCRAMBLE (leaves, bark, roots, tree, seed, wood)
- Pocket Chart Words
- Audio CD of Lingít words and phrases
- Interactive CD Rom of Lingít language activities

## Vocabulary

### Lingít

*aas*  
*keishish*  
*aas kwáani*  
*at yaa awunéi*  
*kútlk'w*  
*gagaan*  
*héen*  
*yées daséik'w*  
*yadaak'atsk'u*  
*x'áax'*  
*x'áax' aasí*  
*aas seiyí*  
*aas xeiyí*  
*t'áa*  
*x'úx'*  
*aas goowú*

### English

tree  
alder tree  
the spirit of the tree people  
respect  
soil  
sun  
water  
fresh air  
boy  
apple  
apple tree  
shelter of a tree  
shade of a tree  
board  
paper  
tree stump

## Lingít Phrases

Insert target vocabulary above into phrase positions marked by (\_\_\_). Encourage students to use Lingít vocabulary words and phrases in each activity.

<i>Daat eetéena<sub>x</sub> sá yatee wé (x'áax' aasí)?</i>	What does the (apple tree) need?
<i>(___) eetéena<sub>x</sub> yatee.</i>	It needs (___).
<i>Daa sá du tuwáa sigóo wé yadaak'atsk'u?</i>	What does the boy want?
<i>(___) du tuwáa sigóo.</i>	He wants (___).
<i>Daa sáyá?</i>	What is this?
<i>(___) áwé</i>	That is (___).

## Activities

### Activity #1

#### Learning Lingít vocabulary through TPR and repetition

Introduce the target vocabulary words by giving Total Physical Response (TPR) directions to students, using pictures of each word. Demonstrate the desired actions until students no longer need the visual cues in order to respond. Begin with the plural forms, addressing the whole class. When students become comfortable with the instructions, use the singular forms with individual students.



Insert the target vocabulary in the (\_\_\_).

Aast *yich'ix'*.

(*X'áax't*) *yich'ix'*.

(*Gagaant*) *yich'ix'*.

(*Yadaak'atsk'ut*) *yich'ix'*.

(Aast) *yishi*.

(*X'áax't*) *yishi*.

(*Gagaan*) *yahaayít yishi*.

(*Yadaak'atsk'ut*) *yishi*.

Point to the (trees).

You all point to the (apple).

You all point to the (sun).

You all point to the boy.

You all touch the (tree).

You all touch the (apple).

You all touch picture of the (sun).

You all touch the (boy).

Review the target vocabulary by question and answer repetition drills, using pictures or real objects. Insert the target vocabulary in the (\_\_\_).

*Daa sáyá?*

(*Aas*) *áwé*.

What is this?

That is (a tree).

## Activity #2

### Story read-aloud/ discussion

Read and discuss the book *The Giving Tree* by Shel Silverstein. In this book, every day a boy would come to the tree to eat her apples, swing from her branches, or slide down her trunk...and the tree was happy. But as the boy grew older he began to want more from the tree, and the tree gave and gave and gave, resulting in the death of the tree.

Lead a discussion about the book by asking questions about the story:

- What type of tree was it?
- How did it grow?
- What are some of the things it gave the boy? (played in its leaves, provided shade, apples to sell, branches to make lumber for a house, and a stump to sit on)
- Was the boy respectful of the tree?

Ask a few questions about the story in Lingít. The (\_\_\_) is where you can insert target vocabulary words. Use a wall chart and have students fill in the blank.

*Daa sá du tuwáa sigóo (yadaak'atsk'u)?*

(*X'áax'*) *du tuwáa sigóo*.

(*X'úx'*) *du tuwáa sigóo*.

(*T'áa*) *du tuwáa sigóo*.

What does (the boy) want?

He wants (an apple).

He wants (paper).

He wants (boards).

Explain the Lingít concept of *aas kwáani* to the class. It means that trees have spirits and Tlingit ancestors used to show great respect to the spirit people of the trees. They communicated with trees and never took more than was necessary. You may also want to invite an Elder in to talk about this traditional concept.

Ask students how they can show respect. (Ideas to prompt discussion include not littering, not destroying the forest, recycling paper)



## Activity #3 A tree is a plant

Think back to what the tree gave the little boy in the *Giving Tree* story. Brainstorm on chart paper or a board some things that trees do for us. (eg. shade, look pretty, homes for animals, wood for firewood, help the soil, wood for smoking salmon)

On another paper or board, brainstorm what a plant is. What are some plants that they know? What does a plant need to survive? (soil, sunlight, water, nutrients). List as many of the Lingít target vocabulary words as possible while brainstorming.

Ask the class to complete the worksheet *What a Plant Needs* (See Resources). They will need to think of a plant they know or have seen. A houseplant in the room may help prompt thinking. Students then draw and color or paint a picture of that plant. Have them label the parts of the plant in Lingít, using target vocabulary words.

## Activity #4 What plants need

Bring in a plant (preferably a small alder or cottonwood tree). Show the plant to the students, reviewing the basic attributes of the plant. If the students need promptings, remind them about the book *The Giving Tree*.

Discuss what makes it possible for this plant to be alive. (air...water...soil...sunlight)  
Draw a large picture of the plant on chart paper or a board to illustrate these 4 things.

Students complete the second WHAT PLANTS NEED worksheet (See Resources). Each of the four circles should be filled in (using words or pictures) with one of the four essential attributes of a plant. They can also label these in Lingít.

You may list the Lingít phrase patterns on a wall chart to teach students how to talk about what a tree/plant needs.

*Daat eetéenax sá yatee wé (aas)?*  
*(Héen) eetéenax yatee.*  
*(Kúlk'w) eetéenax yatee.*  
*(Gagaan) eetéenax yatee.*  
*(Yées daséikw) eetéenax yatee.*

What does the (tree) need?  
It needs (water).  
It needs (soil).  
It needs (sun).  
It needs (fresh air).

## Assessment

- Make note of who completes worksheets accurately.
- If time permits, after each activity have each student share a worksheet and say the Lingít target words. Note and record which students have memorized correct Lingít vocabulary and phrases.



## Lesson #2

### Learning About Trees

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#### Objectives

Students:

- Are introduced to the parts of a tree
- Learn what factors influence tree growth
- Observe characteristics of trees and leaves
- Identify and explain the significance of a tree's annual rings
- Use the Lingít words pertaining to this lesson

#### Time

1 - 3 class periods

#### Materials

- Pictures of trees and parts of trees
- Pictures of alder and cottonwood trees
- Real alder and cottonwood leaves
- Library books about trees (especially alder/cottonwood if possible)
- Pencils and Crayons- (especially brown, red, and green)
- Paper
- Notebooks
- Teacher made flashcards with words for the parts of a tree
- Teacher made flashcard pocket chart
- Plain white, paper plates, at least one for each student
- Small sticky notes (for labeling life events on the plate)
- Worksheet: Labeling Tree Anatomy
- Assessment sheet: Alder/Cottonwood trees

#### Vocabulary

##### Lingít

*xaat*  
*aas tuságu*  
*at looní*  
*at t'áni*  
*aas shakée*  
*kayaaní*  
*s'óos'ani*  
*at x'aakeidí*  
*at shaadi*  
*a tu.eetí*  
*téix'*  
*koojúxaayáx*

##### English

root  
trunk  
bark  
branches  
tree crown (top)  
leaf  
cone  
seeds  
sprouts  
heartwood  
heart  
circle



## Lingít Phrases

Insert target vocabulary words in the (\_\_\_\_)

*Wáa sá duwasáakw yáat'aa Lingít x'éináx?* What is this called in Lingít?  
*(Kayaaní) yóo duwasáakw.* That is called (a leaf).

*As gutúdei gaxtoo.aat* We will walk in the forest.  
*Keishish ka dúk aadei a gaxtoolgein* We will look at alder and cottonwood trees.

*X'oon táakw sáwé i katáagu?* How old are you?  
*(\_\_\_\_) táakw ax katáagu.* (\_\_\_\_) years.

## Teacher Background Information

The following activities focus on respect for ourselves and the world around us, especially the forests and trees. Children learn about and practice the traditional tribal values. They listen well and with respect, and work to comprehend how we are stewards of the land, and that in order to care for and respect it, we need to understand it.

The health of an ecosystem depends on the interdependent relationships of the living organisms within it. Alder and cottonwood trees are an important part of the old-growth forests of Southeast Alaska. These forests are home to grizzly bears, black bears, deer, squirrels, owls, bald eagles, many other creatures and salmon streams.

**Parts of a tree:** Trees grow from seeds. When the seeds germinate, the tree begins to grow. As the seed starts to grow, it develops a stem, and a root. Once the leaves unfold the leaves develop into their adult form. This little tree is called a seedling.



Once the seedling grows the root system becomes stronger. The roots of a tree absorb nutrients and moisture from the soil. The bark that covers the tree trunk helps protect the transport of these nutrients. A tree's bark is its skin. It protects the tree from animals, and from drying out.

Buds of trees contain very small leaves folded inside cases. Once these small leaves burst out of a case, they get larger and unfold, getting their energy from sunlight. They use energy to mix carbon dioxide and water into fuel for the tree.

**Types of trees:** There are broad-leafed trees with either simple or compound leaves. Simple leaves have one main leaf on a stalk, whereas compound leaves are a group of leaves attached to one stalk. Some trees – conifers like pines, redwoods - have needles and scales.

Some trees have blossoms that become fruit. Blossoms are pollinated by animals, like birds and bats. Fruits and berries are produced on these trees. Animals feed on the fruit and help spread the seeds of a tree. Some trees produce nuts and cones.



## SimpleTree Vocabulary Definitions:

- **Branches** – *at t'áni* - woody parts of the tree that grow from the trunk
- **Canopy of leaves** – *aas shakée* - upper parts of a tree, where the leaves are
- **Roots** – *χaat* - structures that get food and water from the soil, store energy, and provide support for a tree. Most roots grow underground.
- **Trunk** – *aas tuságu* - the main support of the tree

## Activities

### Activity #1 Describing trees

Display a large picture of an alder or cottonwood tree and lead a discussion about the characteristics of the tree in the picture. In the pocket chart display the words that describe tree attributes in Lingít and English.

Display many pictures of various types of trees. Discuss the different parts of each tree, using as many attributes as possible. Note the differences that children notice in the pictures/illustrations.

Invite an Elder/culture bearer to talk about the traditional protocol of harvesting alder trees. Also ask the Elder to talk about the concept of *aas kwáani* with the children.

Emphasize Lingít vocabulary by using the TPR phrase patterns, or asking children what each attribute is called in Lingít, and having them answer.

Discuss the target vocabulary in English and Lingít by displaying them as a label on the teacher created tree poster.

*Wáa sá duwasáakw yáat'aa Lingít χ'éináχ?*  
(*S'óos'ani*) *yoo duwasáakw.*  
(*Kayaani*) *yóo duwasáakw.*  
(*χaat*) *yóo duwasáakw.*  
(*Aas tuságu*) *yóo duwasáakw.*  
(*At looní*) *yóo duwasáakw.*  
(*At t'áni*) *yóo duwasáakw.*

What is this called in Lingít?  
That is called (a cone).  
That is called (a leaf).  
That is called (a root).  
That is called (the trunk).  
That is called (bark).  
That is called (branches).

Vocabulary for tree parts can also be combined with the names of tree species:

*keishish kayaani*      alder leaf  
*dúk kayaani*      cottonwood leaf



## Activity #2 Nature walk

Tell students that they need to carry a notebook and pencil with them on the nature walk to take notes, draw pictures of trees and leaves, and to write down their observations.

*As gutúdei gaḵtoo.aat* We will walk in the forest.  
*Keishish ka dúk aadei at gaḵtoolgein.* We will look at alder and cottonwood trees.

Guide the children on a nature walk in a nearby forest, focusing on trees and leaves. Have students collect different kinds of leaves, take notes or draw diagrams, and make general observations about trees.

Use some TPR phrase patterns to guide the children on their nature walk.

Look at (the leaf).	<i>(kayaan)t latín.</i>
Look over there.	<i>Yoot eelgein.</i>
Look at the trees.	<i>Aast latín.</i>

Return to class and discuss findings and observations.

## Activity #3 Read Aloud and group writing

Read aloud different childrens' books about trees, or reread *The Giving Tree* by Shel Silverstein.

Tell students that they will work in pairs to develop written descriptions of a tree and its leaves. Review the following important writing skills that they should focus on during this activity: capitalization, punctuation, use of rich adjectives and comparisons. Use the wall chart to display an example sentence in English and Lingít.

After the students have completed their tree descriptions instruct them to illustrate their writing. Check students' completed descriptions for the presence of writing skills emphasized. Review the target vocabulary words on the pocket chart.

As a classroom project, collect all illustrations and descriptions and insert into a book.

## Activity #4 My life as a tree

Introduce students to three parts of a tree, and how they function. Ask the questions:

- Does anyone know the purpose of the bark on a tree?
- Does anyone know what the words cambium and heartwood mean?
- Has anyone ever seen the "rings" inside of a tree?
- Does anyone know what a tree's "rings" represent?



Explain the significance of the bark (protects the tree) cambium (helps tree make new bark), and the heartwood (supports the tree). Teach the children the target vocabulary to the children in Lingít.

<i>at looní</i>	bark
<i>a tu.eetí</i>	heartwood
<i>sáx'</i>	cambium

Draw a poster on butcher paper, or on a chalkboard/whiteboard to show these three layers. Ask and answer any questions to check for understanding.

Explain an important thing about the annual rings on a tree - they help to tell its age. Show the students how to properly count a tree's rings in order to calculate its age (Count only the dark or light shades, not all of the shades). Count the number of rings on a sample tree cookie (a crosscut piece of tree that you bring in for demonstration)

Give each student a white paper plate, and brown, red, and green crayons. Instruct the students to color the bumpy outside part of the plate brown, just like the BARK of a tree.

<i>(At looní) yaháahí kaysháxít.</i>	Draw bark.
<i>S'agwaat yáx yatee kadas'eik'w wé (at looní)</i>	Color the bark brown.

Just inside the bark, draw a green circle around the plate. The green will represent the CAMBIUM.

<i>(Sáx') yaháahí kaysháxít.</i>	Draw cambium.
<i>S'oow yáx yatee kadas'eik'w wé (circle).</i>	Color a green circle.

Draw a red heart symbol in the center of the plate to represent the HEARTWOOD.

<i>(A tu.eetí) yaháahí kaysháxít.</i>	Draw heartwood
<i>X'aan yáx yatee kadas'eik'w wé (teix').</i>	Color a red heart

Instruct each child to put the same number of rings as their age, on the plate. Give each student a pencil and two small sticky labels. Direct them to place the label beside at least two important events in their life. (Eg. when they started school, learned how to ride a bike, how to swim, baby brother was born, etc.)

<i>X'oon táakw sáwé i kutáagu?</i>	How old are you?
<i>( ) táakw ax kutáagu.</i>	I am ( ) years old.

Review counting in Lingít and teach students the phrase pattern to tell their age in Lingít, and then place the phrase patterns on the wall chart. When done have students share their life plates with classmates.

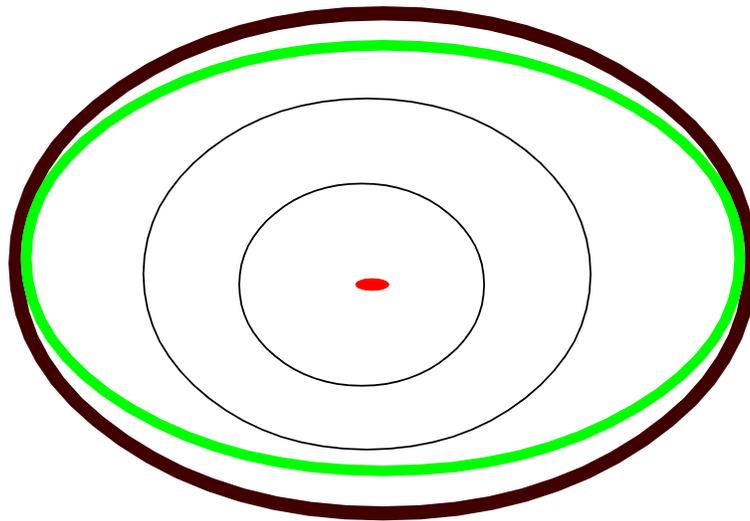


## Assessment

Using a checklist or a simple rubric evaluate the following:

- Was each student able to construct a plate as directed?
- Could each student name the tree parts in Lingít?
- Could he/she label at least 2 life events on the tree diagram?
- Did each student label 3 main tree parts? (bark, cambium, heartwood)
- Did each student share a finished plate with a peer?
- Could each student say the phrase pattern in Lingít?

The following is an example of a diagram/model of how to create, color, and label the plate to represent the rings of a tree.



## Activity #5 Discussing tree parts and trees as a natural resource

Teach students the definitions for the following vocabulary:

*at looní*

*aas shuká*

*xaat*

*aas tuságu*

**bark**- Exterior of a woody stem

**crown**- Upper part of a tree that bears branches and leaves

**roots**- Lower portion of a plant bearing neither leaves nor flowers; it develops mostly underground and anchors tree in soil

**trunk**- Main body, stalk, or stem of a tree, without branches



Lead a discussion about trees as a natural resource.

- Every year the average American uses up one tree that is 100 feet tall and 18 inches across! That is what it takes to make all the books, newspapers, magazines, toilet paper, writing paper, tissue paper, paper plates etc. used by a person during one year.
- It takes an average of 25 - 40 years for a tree to grow big enough so it can be cut down to make the things one person needs.
- As long as a tree lives, it never stops growing.

Now explain the four main parts of trees:

1. The top of the tree is called the crown. It is made up of branches, twigs, and leaves.
2. The roots are the most important part of a tree. They are at the bottom of the tree, underground, and hold the tree in place in soil. They soak up the food a tree needs to live.
3. The trunk is between the crown and the roots.
4. The tree is covered with a protective skin - the bark - which comes in many colors, textures, and thicknesses.

Brainstorm with students ways we use trees every day. Show children a picture of an alder or cottonwood tree and discuss their importance to the Lingít people. They were used for making carving tools, for burning to smoke fish, used by some eagles as nesting trees, etc....

Review the parts of a tree, labeling them on a large, poster sized drawing of a tree, or on an overhead transparency of a tree diagram. \* You can also make a large cutout of a alder/cottonwood tree to put on your whiteboard/bulletin board. Make cutouts of the words in English and Lingít, and call on volunteers to place the words in the correct place on the trees. Have students label, and then color if possible, their own diagrams of a tree, and label the CROWN, BRANCHES, TRUNK, and ROOTS in English and Lingít.

### **Assessment**

Were students able to correctly identify/label in English and Lingít the four parts of a tree discussed in the lesson?

## **Lesson #3**

### **A Tree throughout the Seasons**

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#### **Objectives**

Students:

- Learn about the seasons
- Observe and describe changes that occur with a designated tree
- Learn to speak new Lingít words and phrases

#### **Time**

20 - 30 minutes each activity *over the course of the year*



## Materials

- *Seasons* by John Burningham, Atheneum (July 1, 1971) ISBN: 0672509288. or other books about the seasons
- Chart or poster paper divided into 4 sections, labeled SUMMER, FALL, WINTER, and SPRING
- Individual copies, or chalkboards/whiteboards for each student
- Drawing paper- 5 pieces per student
- Crayons- 1 pack per student
- Variety of pictures representing each season
- Camera to take pictures of the tree during each season
- Worksheet: COMPARING LEAVES
- Worksheet: MY FIRST LEAF/MY SECOND LEAF

## Vocabulary

### Lingít

yeis  
 táakw  
 taakw.eetí  
 kutaan  
 yax kuhá  
 keishísh  
 dúk  
 kayaaní  
 a t'áni  
 a shaadí  
 s'óow  
 s'agwaat  
 hooch'

### English

fall  
 winter  
 spring  
 summer  
 season  
 beach or mountain alder  
 cottonwood  
 leaves  
 branch  
 shoots  
 green  
 brown  
 gone

## Lingít Phrases

Insert the target vocabulary in the (\_\_\_\_\_)

*Aadéi gaxtoo.aat aya yagiyee.*

(\_\_\_\_\_) *at aaxtoolgein.*

*Daat kuhá sáyá?*

*(Yeis) áyá.*

*(Táakw) áyá.*

*(Táakw.eetí) áyá.*

*(Kutaan) áyá.*

*We will go on a walk today.*

*Let's look at (\_\_\_\_\_).*

*What season is it?*

*It is (fall).*

*It is (winter).*

*It is (spring).*

*It is (summer)*

## Teacher Background Information and preparatory activity

Tlingit people had discipline and obedience to traditions and lived in close harmony with the land. Being closely tied to the land, they were also greatly tied to the seasons. In this lesson students spend time observing and studying a nearby alder/cottonwood tree and learn more about what it means to be stewards of the land.

Have the children draw a picture of the tree the class has chosen and label the season. Let the children know that their pictures will be made into their own individual tree books. During each season, the students will draw that tree and make a book at the end of the year.



Draw an alder or cottonwood tree on a wall/bulletin board of the room. Have books and pictures depicting the different seasons. For the SUMMER tree have students make leaves to add to the tree to look like summer, making leaves out of green construction paper. During the FALL season allow students to make leaves of green, orange, red/brown and attach to the tree. For the WINTER season take all leaves off of the tree. During the SPRING season ask students to make buds for the tree.

For each of the seasons, a picture can be taken of the “adopted” tree. Post the pictures so students can observe and talk about the changes that take place through the year.

## Activities

### Activity #1 Introduction to the seasons

*(To be completed at the beginning of the school year.)*

Show students the seasons chart divided into four groups labeled in English and Lingít: summer, fall, winter, and spring. Discuss with them how the year is divided into four parts. Tell the season’s names and brainstorm ideas about the characteristics of each season, from their experiences. Using the pocket chart and pictures of the seasons, introduce the Lingít target vocabulary words and phrases.

Show children pictures of alder and cottonwood trees during all four seasons. Read a book, such as *Seasons*, and discuss the changes that occur during the different seasons of the year.

After reading the book, discuss the changes that occur around us during each of the seasons.

- For example, in the fall leaves change colors, Halloween, days are shorter, berries are gone, etc.
- Display the chart to be used throughout the year. Encourage students to add to it as they notice seasonal changes.

### Activity #2 Observing an alder or cottonwood tree in summer

*(To be completed the same week as the first lesson)*

Show students the chart with the characteristics of the four seasons, reviewing each season, their names and characteristics.

Explain to students that they are going to choose a tree nearby (ALDER or COTTONWOOD) and observe the changes throughout the school year. If there’s not one in the schoolyard find one within a short walking distance of school, if possible.

Model for students how you would draw this tree in summer. Point out shading and the presence of lots of green leaves. Pass out clipboards, paper and crayons to each student. Have students draw “their” tree and label it with the English and Lingít word summer.



As students are drawing, encourage them to look at the tree and draw what they see. Use descriptive words when talking about the tree and their drawings. Collect the individual drawings to add to books that will be made at the end of the year.

### **Activity #3** **Observing an alder or cottonwood tree in the fall**

*(To be completed sometime during the fall season).*

Collect clipboards, paper, and crayons to take along on a walk to the tree. Have students sit around the tree and observe the changes that occurred since the last time the class visited the site.

Model for students how you might draw a fall tree and label it with the English and Lingít word for fall. Have students draw the tree and write the word fall. As students are drawing, encourage them to look at the tree and draw what they see. Use descriptive words when talking to them about the tree. Keep the student drawings to add to their individual books.

*(Kayaaní) at aaxtoolgein.  
(Yeis')t yaa koowaháa.  
S'agwaat yáx kayaaní yatee yeisx'w.  
(Kayaaní)t eelgéin.  
(Aas) yaháayi kayshaxít.*

Let's look at (leaves).  
It's (fall) now.  
Leaves are brown in the fall.  
Look at the (leaves).  
Draw (a tree).

### **Activity #4** **Observing an alder or cottonwood tree in the winter**

*(To be completed during the winter season).*

Show students the four seasons chart you made at the beginning of the year. Ask them to describe each season, reminding them about the colors of the season, events that take place, what happens to people, plants, and animals during each season.

Also show them the summer and fall pictures of the class's "adopted" tree and have children describe what they drew. Ask them to predict what the tree will look like during the winter season.

Review with the children the Lingít vocabulary and phrases.

Take the students to visit the tree. Ask them to observe the tree, and discuss the changes that they see. Pass out clipboards, paper, and crayons to students so they can draw the tree and label it in English and Lingít with the word winter.

Encourage students to look closely at the shape, colors of the tree, and model the use of descriptive words as you talk to them about the tree. Keep the student pictures to make individual books at the end of the year.



*(A t'áni) at aaxtoolgein.*  
*(Táakw)t yaa koowaháa.*  
*Hóoch'i kayaaní táakwx'w.*  
*(A t'áni)t eelgéin.*  
*(A t'áni) yaháayi kayshaxít.*

Let's look at (branches).  
 It's (winter) now.  
 Leaves are gone in the winter.  
 Look at the (branches).  
 Draw (branches).

## Activity #5 Observing an alder or cottonwood tree in the spring

*(To be completed during the spring season.)*

Show students the seasonal pictures they drew of the “adopted” tree (summer, fall, winter). Have students share one of their previous tree drawings with a peer, describing what they drew. Also have the students say the Lingít vocabulary and phrases they have learned. Ask various students to tell some characteristics of the different seasons. Show and read from the four seasons chart from the beginning of the year.

Take the students to visit the tree. Discuss changes that have taken place. Pass out clipboards, paper, and crayons. Tell students to draw the tree and label it in English and Lingít with the word spring.

Encourage them to look closely at the shape, colors of the tree, and model the use of descriptive words as you talk to them about the tree. Keep the student pictures to add to their individual books.

*(A sháadi) at aaxtoolgein.*  
*(Taakw.eet)t yaa koowaháa.*  
*Kayaaní at sháadi yáx taakw.eetix'w kuwoohaayee.*  
*(At shaadi)t eelgéin.*  
*(At shaadi) yahaayi kayshaxít.*

Let's look at (shoots).  
 It's (spring) now.  
 Leaves sprout in the spring.  
 Look at the (shoots).  
 Draw (shoots).

## Activity #6 Making a cover for the book

*(To be completed the same week as activity #5)*

Show students the four seasons chart and discuss characteristics of each season. Ask them to say the Lingít word for each season. In the discussion, add any more characteristics that the children can come up with. Tell them that they are going to make a book with the pictures they drew of the adopted tree throughout the school year. Brainstorm a title for the book and model for students how to write it on a blank piece of paper. Tell them that along with the title the cover should be bright and colorful.

Give each student their four pictures, a blank piece of paper and crayons or markers. Allow each child to think of his/her own title for an individual book. When they have all finished and added a cover, display the finished books in the class or school library. Encourage students to add a page of writing out the Lingít phrases with the English translation for each phrase.



## Assessment

Take notes on how much each child participates in discussions about the tree, especially how they use descriptive words.

## Lesson #4 A Nature Walk

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### Objectives

Students:

- Learn about the importance of photosynthesis
- Know how to classify trees and leaves
- Observe and describe leaves
- Learn the Lingít words and phrases pertaining to trees, leaves
- Learn how to show respect and reverence for aas *kwáani*.

### Time

45 minutes - 1 hour

### Materials

- Paper
- Glue
- Markers, crayons
- Forest or outdoor area
- Books about different types of trees
- Magnifying glasses or hand lenses
- Centimeter rulers
- Pictures of trees
- Construction paper for booklets
- *A Tree is Nice* by Janice Udry or other books about trees
- Action rhymes to act out (one included in Resources)

### Vocabulary

#### Lingít

*keishish kayaaní*

*dúk kayaaní*

*kasiḵ'áḵw*

*tlél koosḵ'áḵw*

*yeik lisaa*

*yei kuwúḵ'*

*kayaaní téet'i*

#### English

alder leaf

cottonwood leaf

jagged edges

straight

narrow

wide

veins



## Lingít Phrases

*Daa sákw liséik'w wé kayaaní?*  
 (S'ooow) *yáx yatee wé kayaaní.*  
*Waa sákw ligei wé kayaaní?*  
*Kayaaní tléin áwé.*  
*Kayaaní k'atsk'u áwé.*  
*Tlél koosx'áxw kayaaní wáni.*  
*Kasixáxw kayaaní wáni.*  
*Yawúx'u aa kayaaní.*  
*Yeik lisaa wé kayaaní.*  
*Ch'oo shóogu yax gé has yatee?*

What color is the leaf?  
 The leaf is (green).  
 What size is the leaf?  
 It's a big leaf.  
 It's a small.  
 The leaf has smooth edges.  
 The leaf has jagged edges.  
 The leaf is wide.  
 The leaf is narrow.  
 Are they the same?

## Teacher Background Information

Tlingit people became great leaders, artists, hunters and builders in part due to their patience. In these activities students practice patience as they carefully gather and observe leaves. They must listen well and with respect as you teach them about leaves, photosynthesis, and important tree facts.

To give good insights about the forest and how Tlingit people utilize trees effectively, invite Elders and forest experts to visit the class. Carvers, boat builders, tool makers, weavers, and other talented artisans would also greatly contribute to this lesson.

Students gather tree leaves, so plan on doing this sometime soon after school has started, when the seasons have started to change, and the snow hasn't yet fallen too heavily. Be sure and familiarize your students with the term 'classification' and 'characteristics', as they will study different leaves, trying to learn what makes them different. Also be sure you have a good basic understanding of the process of PHOTOSYNTHESIS.

In Activity #4 students create a Venn diagram. Venn diagrams help to describe and compare elements and characteristics of items. To help students create a Venn diagram, ask the following questions:

- What do I know about this item/situation?
- What are the 3 most important elements of this item/situation?
- What characteristics do the elements have in common?
- What characteristics do the elements not have in common?

What makes Venn diagrams interesting is the overlap areas. It's fairly easy to put labels on each of the three circles, but it's the overlap areas that stimulate thinking. "Life occurs in the overlap areas".

## Activities

### Activity #1

### Identifying differences between alder and cottonwood trees

Find pictures of alder and cottonwood trees to show the class. Collect leaves from both trees. Show the pictures and leaves to the children and lead a discussion about the differences between the two trees.



Using a large piece of butcher paper prepped with two rows, label them: alder leaves (*keishish kayaani*) and cottonwood leaves (*dúk kayaani*). Paste pictures of each leaf in the appropriate column. Ask students to dictate the differences in attributes and characteristics of alder and cottonwood trees.

Tell the children that they need to draw a picture of either an alder or cottonwood leaf and label it with the appropriate title.

## Activity #2 Collecting different types of leaves

Take students outside to observe alder and cottonwood trees. Instruct them to find and collect at least 2 different types of leaves. Ask them to bring the leaves inside and glue them to a sheet of white paper. Proceed to show them books with different types of leaves and ask them, "How can you tell which tree your leaf belongs to?" Ask them to think about color, shape, design, etc...

Explain to them that they are using CLASSIFICATION to identify the correct tree for each leaf. After they have named the tree have them explain how they came to that conclusion. When you know they are correct have them write the tree name on a paper. If the children regularly write in journals have them write about what they did and if they were correct in their findings. Encourage the children to also write the Lingít words in their journals.

*(Kayaan)t eelgein.*  
*Aax yeik sanéi déix kayaani.*  
*Sgóondei yeik sanéi wé kayaani.*

Look at the (leaves).  
Pick up two leaves.  
Carry the leaves to the school.

*Waa sákw liséik'w wé kayaani?*  
*(S'oow) yáx yatee wé kayaani.*  
*(S'agwáat) yáx yatee wé kayaani.*  
*(Goon) yáx yatee wé kayaani.*  
*(Shéix'w) yáx yatee wé kayaani.*  
*(X'aan) yáx yatee wé kayaani.*  
*(Tl'áatl') yáx yatee wé kayaani.*

What color is the leaf?  
The leaf is (green).  
The leaf is (brown).  
The leaf is (gold).  
The leaf is (orange).  
The leaf is (red).  
The leaf is (yellow).

## Activity #3 Observe a leaf

There is an enormous variety among the leaves of plants. Leaves are large, small, slender and wide. They can be soft, prickly, hairy, hard, or soft. All leaves have one thing in common - they change sunlight into energy through PHOTOSYNTHESIS. Leaves absorb carbon dioxide from the air and with water that comes through the roots of the plant, combines these elements and releases the oxygen into the air. By this exchange, plants maintain a level of oxygen in the air that benefits all living things.

Stress to the children that this is how we are connected to *aas kwaaní* - the traditional concept that the trees have spirits. All people need to show reverence and respect for the *aas kwaaní*. Traditional protocol for harvesting trees for resources is an important reflection of the respect that Alaska Natives show to all living things.



Have students examine their special leaves carefully, using magnifying glasses or hand lenses if available\*. Avoid letting the leaves dry out; they can be more difficult to work with if they are brittle.

Have the children complete the worksheet *Comparing Leaves* (See Resources). Tell them to look carefully at their special leaves and draw them in the correct boxes on the worksheet. Direct them to use a magnifying glass to look at the veins of the leaves.

In the two bottom boxes, students should explain how leaves are alike, and how they are different. Describe each leaf by filling in the blanks on the worksheet page. Have the children describe the leaf in Lingít as much as possible.

Have the children complete the second worksheet *My First Leaf/My Second Leaf*. Direct them to draw or trace so that each leaf fits on the second worksheet. Then have them use a centimeter ruler to measure the length and width of each leaf. Record those measurements in the correct places on the second worksheet.

*Kayaaní daa kayshaxit.*  
Nakaa wé kayaaní.

Trace the leaf.  
Measure the leaf.

After the students complete their worksheets lead a discussion about leaves. Possible discussion questions:

- Why do plants have leaves?
- Do all leaves look alike?
- Are all leaves green?
- What do leaves do for a plant?
- Do leaves ever change colors?
- What happens to deciduous leaves in the fall?

## Assessment

Observe students and make note of their observation skills. Can they use the magnifying glasses correctly? Assess their written work. Are they recording data (leaf information) in the correct places? Can they write an entire sentence to describe how leaves are alike/different? Are they able to correctly measure the length/width of their leaf? Can they use the ruler correctly?

## Activity #4

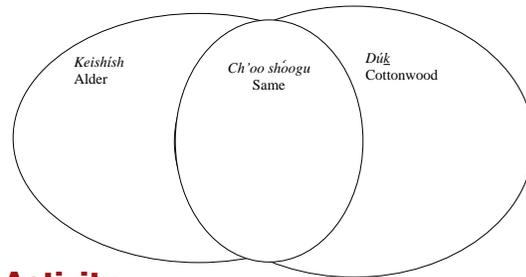
### Comparing two trees using a Venn diagram

Compare two types of trees (preferably alder and cottonwood trees) using a Venn diagram. Have students draw their own Venn diagram, after modeling how it is done on the board. Label the two trees on the lines above each circle.

Instruct students that in the outer circles they write facts about that tree only. In the center circle, the intersecting circle, instruct them to write facts that both trees have in common.



The following is a mini example of the Venn diagram for this activity:



### Optional Extension Activity

Discuss the importance of trees. Show pictures of forests with different kinds of trees. Read aloud a book about trees, such as *A Tree is Nice* by Janice Udry. Take a nature walk around the school to look at different kinds of trees and have students tell their likenesses and differences.

Teach the children rhymes related to trees. Have student perform this action rhyme:

*Tree Friends*  
*Deep in the forest*  
*With trees so tall, (stretch arms high)*  
*I feel so little,*  
*So very small. (make self small)*

*I love to look up*  
*And see the trees sway (cup hand over eye and look up)*

*I know what they are saying,*  
*Let's celebrate today!"*

Have students use tree shape to make "tree books" to write or draw their own thoughts about trees. If time allows, have small groups perform the TREE FRIENDS action rhyme for the class, reader buddies or families.

## Lesson #5 Family Trees

### Objectives

Students:

- Understand how a forest is composed of evergreen and deciduous trees
- Learn that the roots of our family are much like the roots of a tree
- Understand at least 3 benefits of alder trees in our environment
- Learn new Lingít words or phrases

### Time

1 - 2 hours



## Materials

- Medium-blue cloth background
- Black border
- Black letters
- Black, yellow, and green colored paper (several shades of green are preferable, so the trees will stand out)
- Large brown grocery bag (optional)
- Newspapers (optional)
- White paper
- Wide tipped black marker
- Wide, clear shipping tape
- 6" saucer or 10" plate
- Glue
- Evergreen tree pattern
- Sky blue and green construction paper
- Crayons, tempera paint, or markers
- Scissors
- A green, leafy plant, removed from its pot so the roots are exposed.
- Clear plastic cup
- Clear, plastic wrap for top of cup.
- Worksheet: What do Roots and Stems do?

## Vocabulary

### Lingít

*as gutú*

*keishish*

*dúk*

*aas kaayí*

*aas tuságu*

*aas shakée*

*(ax) húnxw*

*(ax) dlaak'*

*(ax) kéek'*

*(ax) shátx*

*(ax) éek'*

*(ax) kéek'*

*(ax) léelk'w*

*(ax) éesh*

*(ax) tláa*

*xaat*

*héen*

### English

forest

alder

cottonwood

tree pattern

tree trunk

tree crown

(my) older brother [boy]

(my) sister [boy]

(my) younger brother [boy]

(my) older sister [girl]

(my) brother [girl]

(my) younger sister [girl]

(my) grandparent

(my) father

(my) mother

root

water

## Lingít Phrases

Insert the target vocabulary in the (\_\_\_\_).

(\_) *yahaayí kayshaxít.*

(\_) *kaylasséik'w.*

*Kei xaash wé* (\_\_\_\_).

*X'úx' kax' kalas'ix'w wé* (\_\_\_\_).

*Waa sákw gwadlaan wé héen.*

*(keijín) centimeters gwadlaan.*

Draw a (\_\_\_\_).

Color the (\_\_\_\_).

Cut out the (\_\_\_\_).

Glue the (\_\_\_\_) on the paper.

How deep is the water?

It is (five) centimeters deep.



## Teacher Background Information

Throughout this lesson stress with your students the delicate nature of the local ecosystem. As the different parts of the forest work together in peace and harmony, so did Native people strive for the same thing. Tlingit people come from a long tradition of depending on the forests for survival. This lesson is a great opportunity to bring in Elders to talk about the wealth of resources in the nearby forests. Have them talk about traditional uses of trees.

**Deciduous** trees shed their leaves before the cold or dry season. Before this the leaves often turn orange, red or yellow. New leaves appear in spring. There are many different varieties and sizes. Deciduous plants are those that lose their foliage for part of the year. In most cases, the foliage loss coincides with winter in temperate or polar climates, but some plants lose their leaves during dry seasons in arid climates.

Non-deciduous plants are known as **evergreens**. Evergreen means a plant retains its foliage year-round. In temperate climate zones, few plants are evergreen; most are deciduous. The majority of plants native to the wet tropics are evergreen, replacing their leaves gradually throughout the year as leaves age and fall. In temperate climates the conifers stand out by retaining their leaves throughout the winter. The old-growth, mid-latitude rainforests of Southeast Alaska are composed of both of types of trees. To understand how all the parts work together to create a forest one must know about both types of trees.

The Tlingit Indians of Southeast Alaska developed one of the most complex cultures to be found among the indigenous populations of North America. Every Tlingit is a member of one of two groups (referred to as moieties), and identifies himself or herself as a Raven or an Eagle. Members of one moiety refer to the other as “the opposite side.” Marriage was formerly allowed only between persons from opposite moieties, but today this rule has been relaxed. Each moiety comprises smaller kinship groups known as clans. The clan is the enduring organization that unifies the Tlingits into a cohesive, functioning unit. Clans govern social, ceremonial, and political life and link people to their ancestors and future generations. A family tree is a great way to help students understand how they fit into a system.

The Tlingit vocabulary terms teach kinship terms. The terms for brother and sister are gender specific - for example, a male calls his sister by a different name than a sister calls her sister.

## Activities

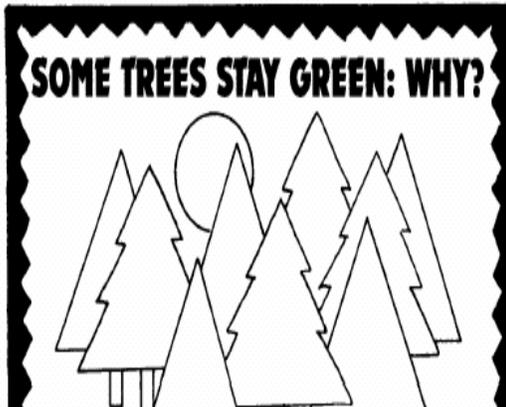
### Activity #1 Tree bulletin board

Ask students if there are trees that don't change colors or lose their leaves in autumn. Lead a discussion about evergreen trees. (They have dark-green needlelike leaves and stay green all winter. In the spring new, light-green needlelike leaves begin to appear at the end of each dark-green cluster of leaves, so the leaves are always green.)



Tell the children that they will create a tree bulletin board.

1. Cut black tree trunks from the tree pattern.
2. Using the tree pattern for tree crowns (See Resources), fold paper and cut two kinds of crowns. One has straight lines and the other pointed sides. If you use white paper for crowns, color the crowns different shades of green- light to very dark- for variation. As an option, cut crowns from colored paper, brown grocery bags, or newspapers, and make them different shades of green.
3. Glue trunks in place.
4. Outline each tree with black marker so it stands out from the others.
5. Cut a yellow sun by tracing around a 6" saucer or larger plate.
6. To make a very large tree crown for the wall of your classroom, cut open six large brown grocery bags down the back seams and cut off the bottoms. Open the bags and glue the six bags together, overlapping each 1/2".
7. Cut a triangular crown from the top center down to each corner. The tree crown will be 6' tall and 4' wide at the bottom. Paint it green.
8. Cut a trunk 6" wide and 16" long. Paint it black. Glue the trunk to the bottom of the tree, overlapping 1/2".
9. Tape the tree to the wall with wide tape.



*Keishish yahaayí kayshaxít.  
Dúk yahaayí kayshaxít.*

*Keishish kayla s'éik'w  
Dúk kadas'éik'w*

*Kei xaash wé keishish.  
Kei xaash wé dúk.*

*X'úx' kax' kalas'ix'w wé keishish.  
X'úx' kax' kalas'ix'w wé dúk.*

Draw an alder.  
Draw a cottonwood.

Color the alder.  
Color the cottonwood.

Cut out the alder.  
Cut out the cottonwood.

Glue the alder on the paper.  
Glue the cottonwood on the paper.



## Activity #2 Making a family tree

Invite an Elder in to talk about how Tlingit people are connected through clan relations, just like the roots of the trees are intertwined.

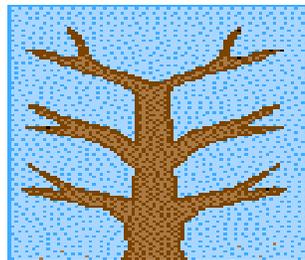
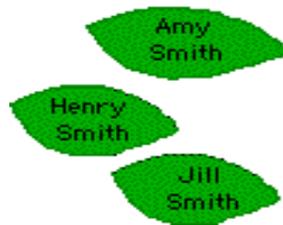
Have each student create his/her family tree, using construction paper.

1. Draw a large tree with many branches.
2. Cut out leaves from the green construction paper or use the leaf rubbings made previously that can be cut out.
3. Each leaf will represent a person in the family and should be big enough to write that person's name on it. Cut enough leaves for each of the child's siblings, parents, and grandparents (or more!).
4. Write the name of each person on a leaf. You might want to include the relative's relationship, like "Grandma Joan Smith."
5. Kinship terms are essential to learning about the Lingít language and culture. Encourage your students to label their family tree in Lingít.

(ax) húnxw	(my) older brother [boy]
(ax) dlaak'	(my) sister [boy]
(ax) kéek'	(my) younger brother [boy]
(ax) shátx	(my) older sister [girl]
(ax) éek'	(my) brother [girl]
(ax) kéek'	(my) younger sister [girl]
(ax) léelk'w	(my) grandparent
(ax) éesh	(my) father
(ax) tláa	(my) mother

6. Glue leaves to the tree. Put the child's generation at the top of the tree, the parents at the second level, and the grandparents at the bottom. (Some local students have added extra leaves for local animals as well - birds, wolves, salmon, bears).

Below is an example of the steps to make a family tree.



← The child and siblings

← The child's parents

← The child's grandparents



## Activity #3 What do roots and stems do?

### Teacher Background Information

When a tree seed germinates, the first (primary) root grows down in the soil in response to gravity. Secondary roots then branch off horizontally, with subsequent branching into tertiary roots, etc.

Absorption of water and mineral nutrients is the function of the very fine, non-woody roots (the feeder roots). With continued growth, each root loses its ability for absorption. These larger woody roots then function as the transport system for water and nutrients from the new feeder roots to the stem. They are also the tree's system of anchorage and a food storage area.

The resulting system thus consists of several main transport roots that extend radially and horizontally from the tree base and divide into ever smaller roots, each ending in a dense mass of fine feeder roots.

Because of the horizontal growth pattern of the tree root system, nearly 99% of all the tree's root mass is usually located in the top three feet of soil. The roots can also extend far beyond the tree's "drip line," typically radiating out from the trunk a distance of 0.5 to 1.5 times the tree's height. Imagine tree roots branching in a round pie plate of one-yard depth and a width 2 to 3 times the tree's height.

*Nitrogen* is an essential plant nutrient. It is the nutrient that is most commonly deficient, contributing to reduced agricultural yields throughout the world. The alder tree is a very important contributor of nitrogen in the forests of Southeast Alaska.

### Activity

*\*\*If time/supplies allow, provide enough material to have students perform this experiment in groups of 2 or 3. If not, perform the experiment as a demonstration.*

After giving the students a simple description of how roots and leaves grow out of trees, explain to them that just like all trees, alders, too, have roots. Alder is well known to be a 'pioneering species' of plant. Alder is well suited to grow after an area has been cleared, either by glaciation, fire, or when land is cleared by people. Alder adds biodiversity to a conifer (evergreen tree) dominated landscape. In fact, the spruce and hemlock trees of Southeast Alaska need the benefit of alder trees to grow first, providing protection for them to follow.

Falling leaves from alder are good for the soil. Alder is well known for helping to fix nitrogen in the soil. Alders can contribute up to 200 pounds of nitrogen per acre!

To help give students an idea of how the roots of a plant work, have them do the following experiment, either in small groups, or as a classroom observation.

1. Put a plant in a clear plastic cup, with its roots dangling into the cup full of water. Use the data table in the Resources section to record the level of the water each day, for five days. On day One they record the water level, in centimeters, on their worksheets. They do the same thing on days 2, 3, 4, and 5.

*Waa sákw gwadlaan wé héen.*  
*(keijín) centimeters gwadlaan.*

How deep is the water?  
It is (five) centimeters deep.



2. At the end of the five days, brainstorm/discuss ideas as to what happened to the water. Have students write about their findings under the heading WHAT HAPPENED TO THE WATER?

## Assessments

- Check to see if students were able to: get himself/herself on her family tree, and at least his/her parents or guardians. (Be open to helping each child to include who he/she feels is an important member of the family) Were they able to make the trunk, branches, and get some names onto a family tree?
- Develop an oral quiz to assess student understanding of the importance of nitrogen.
- Develop a checklist of Lingit words introduced in this lesson and assess whether individual students can pronounce words/phrases when asked.

## Additional Resources

In the Resources two variations on the making of a family tree are provided. The one labeled YOUR FAMILY TREE, starts with the child writing his/her name at the base of the trunk, and branching out as he/she adds mom/dad, maternal and paternal grandparents, etc. This is more complex than pattern suggested above - it might be more effective with second graders.

The second variation is a very basic one, called MY FAMILY TREE and is simple to fill in. It would be a good starter for making a family tree. It has spaces for the child, his/her parents, aunts, uncles, and grandparents. This could be used as a class activity, or very easily modified to use as a take home activity.

## Lesson #6

# Fun and Games with Alder and Cottonwood Trees

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### Objectives

Students:

- Become more observant of nature and our natural surroundings
- Improve their usage and understanding of descriptive language
- Compare various textures
- Review knowledge of the parts of trees and their diversity
- Practice speaking the Lingit words or phrases related to this lesson

### Time

30 to 45 minutes

### Materials

- Blindfolds
- A wooded area with several Alder or Cottonwood trees.
- Cards for the BINGO game
- Pieces of alder/cottonwood bark for rubbing
- Thin, light-weight white paper



- Crayons, peeled
- Enough pieces of alder/cottonwood bark for the entire class
- Small pieces of wood to build a small feely box, OR
- Empty shoe box (or boxes) with a hole cut in the side (easier option)
- Collection of tree seeds
- Twigs
- Branches
- Buds
- Leaves, or other parts of trees that can fit in a box
- A teacher generated list of words about alder/cottonwood trees
- Blank BINGO Game cards in a 3 x 3 grid. (Easily made on the computer, or draw one and copy it for students)
- 9 or 10 game pieces (paper, pennies, math chips, etc.) to be used to cover called out words

## Vocabulary

### Lingít

*keishish looní*

*dúk looní*

*at looní yahaayi*

*kóok*

*kútlk'w*

*héen*

*gagaan*

### English

alder bark

cottonwood bark

rubbing/image of the bark

box

soil

water

sun

## Lingít Phrases

*Kook toot i jín.*

*Daa sá jee idinook?*

*( ) jee xdinook.*

*Kindéi i jín iyawadlaak!*

*Yaa xwadlaak'!*

Place your hand in the mystery box.

What do you feel?

I feel ( ).

Raise your hand if you win!

I win!

## Teacher Background Information

Being a lifelong learner means enjoying what you are doing. In these activities students learn and review information about trees and have fun while doing so. As a people Tlingit people have a strong history of enjoying humor, and the joy that brings into our lives. Students continue learning about respect for our environment, the world, and others, and at the same time continue to learn that it can be joyful to live in peace and harmony with the world around us.



## Activities

### Activity #1 Hug a tree

Read a story or poetry about trees to get the children thinking about trees and the forest. After reading explain to the class that they are going to play a game where each person needs a partner. (You may choose to assign partners.)

Explain the idea of the game:

You or your partner will go outside to a wooded area and one of you will put on a blindfold. Your partner will guide you to a tree that he/she has picked out for you. You then need to feel the tree, “become one with the tree” by putting your arms around it, hugging it. Next you should take notes in your head about the tree and what you felt. Try and remember as many things as you can about your tree.

After each pair has completed this phase call the class back to a meeting spot. Direct each student to go and find his/her tree without the blindfold. Then it will be the partner’s turn.

Review with the children the following Lingít phrases for them to practice while they are guiding their blindfolded partner.

*Ax een naxaa.*

*Haandéi i jín.*

*Jín kwat sheeltín.*

*Tliyéix’!*

Walk with me.

Give me your hand.

Be careful.

Stop!

### Assessment

- Observe which children can follow oral directions.
- Have a group discussion after the game, noting the descriptive language each student uses to describe his/her tree.

### Optional Extension Activity

Take a picture of the children who found their trees without blindfolds and have them write a story about their tree in their journals.

### Activity #2 Bark rubbing

This is a visual art project. Beautiful designs can be made by just laying a piece of paper over a piece of bark, rubbing with the side of crayon to create a rubbing.

Gather as many pieces of Alder and Cottonwood bark as needed for your class so that students will have a variety to choose from. Explain to the class that to make a rubbing, you hold a sheet of paper over the bark and rub with the side of the crayon (with paper peeled off) over the paper.

Have the children label their rubbing/image of the bark.

Have a class discussion about the textures and patterns, What do they see? What are some common patterns seen in all the rubbings? What are some of the differences?



## Assessment

- Note who finished and correctly labels the rubbings.
- Assess who is able to say the Lingít vocabulary words correctly.

## Activity #3 Mystery box

In this activity you make a “feely” box, or boxes and put items in so that students cannot see what the item is. Try to get objects that have an unusual feel.

Use a box with a hole cut in one side (or use an empty tissue box) as a way to have students guess what they are touching. Blindfold students and tell them to feel in the box, guessing what TREE ITEM they are touching.

Ask them to describe the texture. It is more important to have them use their senses and describe what they actually feel than to correctly identify the object. With some of the items you might also have students shake the box, to use their sense of sound. See if they can identify what tree the object(s) might come from.

*Daa sá jee idinook?*  
*(Keishísh looní) jee x̄dinook.*  
*(Dúk looní) jee x̄dinook.*

What do you feel?  
 I feel (alder bark).  
 I feel (cottonwood bark).

## Activity #4 Alder/Cottonwood Tree BINGO

Bingo is a game of luck and concentration, where players try to match a set of randomly selected words (in this case words about alder/cottonwood trees) to the words on their 3 x 3 grid Bingo cards. A player must match a specific pattern, determined before the game. If a player matches the words in the correct pattern and declares Bingo, that player wins the current game. To get a BINGO, you might tell the students they have to have 3 squares across, down, or diagonally.

Start by putting a number of alder/cottonwood tree words on the board. Have the class agree on 8 words that they will use in this game. Pass blank BINGO CARD papers and markers out to the class. The card should be a 3 x 3 grid, making 9 squares total, with the center square being a FREE space.

Students write 8 selected tree words on their cards, As they do this, write each of the words on the list written on a small piece of paper. Put all the small pieces of paper into a hat or box. You will draw and call out the words. Once students have all these words written on their cards start calling out tree words. If they have that word they cover that space with a marker. The first child to get 3 words across, down, or diagonal is the winner!

*Kindéi i jín iyawadlaak!*                      Raise your hand if you WIN!  
*Yaa x̄wadlaak'!*                                      I win!

*(Tip: Ask a question, or ask something about the word which is drawn to help add more review and instruction to the game, while still keeping it fun.)*



<i>A t'áni</i> Branches	<i>Aas tuságu</i> Trunk	<i>Xaat</i> Roots
<i>Kayaani</i> Leaves	FREE SPACE	<i>At looni</i> Bark
<i>Kútlk'w</i> Soil	<i>Héen</i> Water	<i>Gagaan</i> Sunlight

Sample alder/cottonwood tree Bingo card

### Optional Extension Activity

Students may also play Bingo in Lingít two different ways.

- Students write just the Lingít words on the cards without the English words.
- Students draw pictures of the nouns they picked for their bingo cards. This is the recommended way to encourage Lingít language retention by just associating the Lingít words with their picture rather than translating into English.

### Assessment

- Observe who answers as you ask questions about each tree word called out.
- Observe students' ability to follow directions and cover the tree words on game boards as they are called out.
- Develop a checklist of Lingít words taught and assess individual knowledge of the words.

## Lesson #7

### The Science of Trees

#### Objectives

Students:

- Plant seeds
- Learn the parts of the seeds and the germination process
- Observe and record the growth of roots, stems, and leaves of plants
- Observe and record the changes of leaf buds
- Speak Lingít words and phrases that pertain to this lesson

#### Time

1 - 2 hours - Activity #1

1 - 2 hours - Activity #2

#### Materials

- Masking tape
- Pea seeds
- Planter cups (small drink sized cups with holes in the bottom)
- Plastic sheet



- Potting soil
- Water sprinklers
- Felt-tip pens
- Newspapers
- Pebbles
- Water
- Magnifiers
- Quart sized plastic bags
- Paper towels
- Stapler

## Vocabulary

### Lingít

*l'éiw*

*kútl'kw*

*xaat*

*at x'aadeidí*

*a tuyadi*

*at shaadí*

*kayaaní ooꝰú*

### English

pebbles

soil

root

seed

embryo

sprouts

leaf bud

## Lingít Phrases

*K'wátlx' akaa yei na.oo wé kútl'kw.*

*Kanaháa wé at x'aakeidí.*

*Ch'a tlaakw kanaltl'ák'x wé kútl'kw.*

*I (kayaaní) kayshaxít.*

*Aas kei kana.éin.*

Put the soil in the pot.

Plant the seeds.

Keep the soil moist.

Draw your (plant).

The tree is growing.

## Teacher Preparation

For Activity #3 plan on going outside in late winter or early spring when buds are starting to come out on trees. Students will need materials they can bring out into the field to draw their selected buds.

## Activities

### Activity #1

#### The plant life cycle begins

Students use real pea seeds. (Sometimes commercially sold seeds are treated with pesticides and could be dangerous if students put them in their mouths. Seeds available from teacher supply stores usually don't treat seeds with chemicals.) Work surfaces in the classroom should be covered with newspapers to make clean-up easier. You will also need to soak pea seeds overnight in a container of lukewarm water to help speed up the germination process. Fill your water sprinklers with water.

1. Write life cycle on the board and discuss its meaning. (This is the name given to the series of changes living things go through from seeds or egg to adulthood). In Lingít this concept as related to trees is referred to as *aas kustí* (tree's life). Ask the class:
  - a. What kind of changes does a plant go through? (Seed grows into a mature plant, which in turn flowers and produces more seeds.)
  - b. What kind of changes does an animal go through? (An animal is born, grows up, and then has baby animals.)



2. Discuss and model the proper way to plant a seed. Some pointers to help with planting are:
  - a. Do not plant seed too deep.
  - b. Do not press the soil down too hard.
  - c. Do not over water.
  - d. Do not let the soil dry out.
  
3. Give each student a planter cup. Gather students at the planting area. Demonstrate how to put a layer of pebbles (about 2 cm) for drainage into the planter cup. Drainage is necessary because otherwise water may stay in the bottom of the cup. The roots should not get too much water, and the pebbles help the extra water to drain out of the cup.
 

*K'wátlx' kaa yei na.oo wé (l'éiw).*      Put the (gravel) in the pot.
  
4. Have students put pebbles in their planter cups and fill the cups with soil. Add soil to within 2 cm of the top. Caution students not to pack the soil too tightly.
 

*K'wátlx' kaa yei na.oo wé (kutlk'w).*      Put the soil in the pot.
  
5. Each student should plant two pea seeds about 3 cm apart in his/her planter cup. The seeds should be planted at a depth no greater than twice their diameter.
 

*Kanaháa wé at x'aakeidí*      Plant the seeds.
  
6. Tell the students to push the soil back to cover the seeds and press down gently. (The soil should not be too compacted in the cup.)
  
7. Demonstrate how to water the planted seeds with a water sprinkler. Stop when the water begins to run out the bottom of the cup. Do not leave any water standing in the base of the cup.
 

*Ch'a tlaakw kanaltl'ák'x wé kútl'kw.*      Keep the soil moist.
  
8. Give students a piece of masking tape, to put their names on the tape and then attach the tape to their cups. Place the cups close together on a table in a warm, draft-free place. Cover the cups with a large plastic sheet. After about 5 days, lift the plastic to check for signs of emerging plants. It is important that the soil remain evenly moist during germination. (The plants may not need any additional water until they germinate, but if the soil surface becomes dry, water the surface gently with the water sprinkler.)
  
9. Have students help clean up the planting area. Ask one student to mark the date of planting on the class calendar and ask the class for predictions about when the seeds will germinate. Record their predictions on the calendar.
  
10. When most of the seedlings have appeared, remove the plastic sheet. (The first leaves that appear will not resemble the leaves of the mature plant. The first leaves are seed leaves, or cotyledons. The next leaves to appear are called the first true leaves.)
 

*A shaadí kei kana.éin.*      The sprouts are growing.
  
11. If both seeds have germinated in a cup, when the seedlings are about 5 cm tall have the students cut off the smallest or weakest-looking seedling at the soil line.



12. Direct students to draw pictures that predict what the adult pea plants will look like, thinking about the height, flower color, leaf shape, etc. Save the pictures and compare them to the actual plants that emerge.

*Wé kayaaní kayshaxít.*

Draw the plant.

## Activity #2 Germinating seeds

1. Prepare a germinator bag (a clear, 1 quart plastic ziploc type bag) for each student. To make the bags, fold and slide a piece of paper towel into the bag so that the entire bag is lined with paper toweling. Towels that are brown or any solid color other than white will show root growth the best. Put a row of staples along the bag about 4 cm from the bottom. Soak the pea seeds in a container of lukewarm water overnight. Prepare water for the seeds.
2. Ask-How can we observe seed growth that is usually hidden by soil? Tell students they are going to 'plant' seeds in plastic bags so that they can see the seeds as they develop. Distribute the germinator bags and demonstrate how to place a row of peas seeds along the staple row near the bottom of the bag. Then have students place their own seeds.
3. Have students add water (be careful not to over water) slowly to their bags. They want to make a small puddle of water about 1 cm deep in the bottom of the bag. The water will climb the toweling, saturate it, and provide moisture for the seeds. Try to maintain the line of water about 1 cm deep at the bottom of the bag throughout this activity.
4. Have the students take the top of their bags, fold them over twice at the tops, and tape the folds down. This will help keep too much water from evaporating. Have them write their name on the bag, being careful not to block the view of the developing seeds.
5. Have the students make daily observations and record them on their worksheet. Explain to them that each seed contains an embryo and cotyledons. The embryo is the baby plant the cotyledons contain stored food to use until it can make its own food. Have students point out the cotyledons of their pea seeds. Provide at least 3 short sessions so the students can discuss changes in their seeds.
6. The first session should be held when roots began to appear, ask: "What do they see emerging from the seed?" (The root). "What does the root do for the plant?" (Provides water for the plant, holds the plant in the soil).
7. Hold the second session 2-3 days later when the stem is developing and the seed coat is opening. The covering of the seed is called the seed coat. Ask: "Why does the seed coat split open?" (To allow the roots and stem to emerge). "What is emerging from the seeds?" (The stem). "What does the stem do for the plant?" (Holds up the leaves so that they can reach the sunlight; carries water to the leaves).  
Hold the third session when leaves begin to appear. Ask: "What is happening in the bag now?" (The leaves are emerging). "What do the leaves do for the plant?" (Make food for the plant).
8. Not all seeds will sprout. This is okay and is an important part of the growing process for children to notice.



## Activity #3 Bursting buds

Take a nature walk out to a nearby alder or cottonwood tree. Hold down a branch so kids can observe a budding leaf up close. Students can be observing other buds on the branch, other branches, etc. This can easily be made into a math activity by having them count the buds on one small branch, or, to be more challenging, from a large branch. Have students practice the target vocabulary when talking about the branches. Also have the students count in Lingít.

*(A t'áni) eelgein.*

*Look at the branch.*

*(Kayaaní ooǰú) eelgein.*

*Look at the leaf bud.*

Ask students to carefully observe, and then draw the buds and leaves they observed. Later on, return to the same tree to allow students to note the changes the leaf/bud is going through. Ask students to describe, share, and/or write about the development of buds into leaves.

*Kayaaní ooǰú yahaayí kayshaxít.*

*Draw the leaf bud.*

Cottonwood buds can be harvested and processed into a medicinal skin cream.

### Assessment

- Observe students' ability to follow directions during planting and their participation levels throughout the experimentation process
- Use students' growth recordings as an assessment.
- Use oral quizzes to assess the understanding of germination.

### Sample RUBRIC on leaf identification that can be used/modified as a quick assessment

Objectives	Needs Improvement	Satisfactory	Outstanding	Earned Points
Can find and identify different types of leaves	<b>1 point</b> Found and identified one leaf	<b>2 points</b> Found and identified two leaves	<b>3 points</b> Found and identified three or more leaves	
Explains how shape, size, and color of a leaf tells what tree it is from.	<b>0 points</b> Cannot tell what tree a leaf is from.	<b>2 points</b> Can tell one tree that a leaf is from.	<b>4 points</b> Can tell two or more leaves and what trees they are from.	
Uses words to describe leaves.	<b>1 point</b> Can use at least one word to describe a leaf.	<b>3 points</b> Can use two or three words to describe a leaf.	<b>5 points</b> Can use four or more words to describe a leaf.	
			<b>Score:</b>	