Kayaaní

PLANTS

TEACHER RESOURCES

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 #02-0021844) and the Juneau School District (Building on Excellence, grant #S356AD030001).

Lessons and units were written by a team of teachers and specialists led by Nancy Douglas, Elementary Cultural Curriculum Coordinator, Juneau School District. The team included Juneau teachers Kitty Eddy, Shigen George, Kathy Nielson, Hans Chester and Rocky Eddy, and Shl' language team members Linda Belarde, Yarrow Vaara, David Katzwek, John Marks, Mary Follitt, Rose Naitlic and Jessica Chester. Curriculum consultants Julie Folta and Toni Mallott assisted and Annie Calkins edited the lessons and units.

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

All units are available online at sealaskaheritage.org.
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Kóox  Chocolate  
Lily  

K’wálx  Fiddlehead  
Fern  

S’ikshaldéen  Hudson Bay  
Tea  

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<table>
<thead>
<tr>
<th><strong>T’óok’</strong></th>
<th>Nettle</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>K’inchéiyi</strong></td>
<td>Rosehips</td>
</tr>
<tr>
<td><strong>X’áal’</strong></td>
<td>Skunk Cabbage</td>
</tr>
</tbody>
</table>

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Scientist

Inside a Seed

1. Describe your dry seed.

2. Measure your seed.

<table>
<thead>
<tr>
<th>Seed</th>
<th>Unit of Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td></td>
</tr>
<tr>
<td>Width</td>
<td></td>
</tr>
</tbody>
</table>

3. Soak your seed in a cup of water overnight.

   How is the wet seed different from the dry seed?

4. Split your seed in half. What does it look like inside? Find the tiny plant called the embryo.

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5. Why do you think there is so much food stored for the embryo? ___

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________
Label the bean plant parts: food storage, seed coat, little plant (embryo).

1. 
2. 
3. 

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Tape a lima bean to the inside of a ziplock sandwich bag. Measure the plants growth daily. Use the next page to make your predictions.

Draw your bean plant as it grows.
A Seed Grows

How much does your lima bean grow each day? Measure the growth of the stem and root daily.

**STEM Growth**

Use a ruler to measure your plant's stem growth each day. Use a crayon to color the graph.

<table>
<thead>
<tr>
<th>10 cm</th>
<th>9 cm</th>
<th>8 cm</th>
<th>7 cm</th>
<th>6 cm</th>
<th>5 cm</th>
<th>4 cm</th>
<th>3 cm</th>
<th>2 cm</th>
<th>1 cm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Days 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
ROOT Growth

Use a ruler to measure your plants root growth each day. Use a crayon to color the graph.
## Scientist

A Seed Grows

<table>
<thead>
<tr>
<th>Question</th>
<th>Prediction</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Will the root or stem sprout first?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. How many days will it take for the beans to sprout?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. How many days will it take for the first leaves to grow?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. How much does the root grow daily?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. How much does the stem grow daily?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. What else did you observe about your growing plant?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Let’s plant seeds.

You’ll need: Seeds
              Potting soil
              Container
              Plant Beginnings Observation Log

1. Prepare pot and potting soil.

2. Plant your seeds.

3. Keep the soil moist.

4. Make daily drawings and observations in your observation log.
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### Plant Parts

<table>
<thead>
<tr>
<th>Plant Part</th>
<th>Lingít Name</th>
<th>English Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>at x’aakeidí</td>
<td>seed</td>
<td></td>
</tr>
<tr>
<td>xaat</td>
<td>root</td>
<td></td>
</tr>
<tr>
<td>a kadíx’i</td>
<td>stem</td>
<td></td>
</tr>
<tr>
<td>kayaaní</td>
<td>leaf</td>
<td></td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th><img src="image1.png" alt="Image" /></th>
<th><strong>k’eikaxwéin</strong></th>
<th><strong>flower</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image2.png" alt="Image" /></td>
<td><strong>tléikw</strong></td>
<td><strong>fruit</strong></td>
</tr>
<tr>
<td><img src="image3.png" alt="Image" /></td>
<td><strong>tukaxaadí</strong></td>
<td><strong>bulb</strong></td>
</tr>
</tbody>
</table>
Scientist __________________________

A fern is a green plant that grows from spores not seeds.

Use a hand lens to look at a real fern.

My frond has _______ leaves.

There are _______ spore cases on the above leaf.

Pick a leaf about the size of this drawing. Draw the spores on this leaf.

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How We Make Fiddlehead Ferns

We pick the fiddleheads in the spring when they first come up from the fern plant.

We pick off some of the brown fuzz and wash them.

We boil the fiddleheads in water with a little salt until they are soft.

We drain off the water and add a little butter.

Then we eat them. Yummy!
Here’s a drawing of my root.

• My root is colored ________________.

• My root is _______ cm long and _______ cm wide.

• I could/could not eat this root.

• What do Tlingit people use roots for? ________________

My root is from a __________________________.

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How We Make Wild Sweet Potatoes

We dig the roots with a pitch fork.

We wash them.

We put them on a roasting stick.

We roast them over the fire.

Then we eat them. Yummy!
1. Put water in a clear container.
2. Add 3-4 drops of food coloring.
3. Cut the end of the stem.
4. Place the stem in the glass.
5. Leave the stem in the glass overnight.

What happened? ____________________________

________________________

________________________

________________________

________________________

Why ____________________________

________________________

________________________

________________________

What stems do Tlingit people eat? ____________________________

________________________

________________________

________________________

Here’s a drawing of my stem.

My stem is from a ____________________________.
Here’s a drawing of my flower in water.

Directions

• Pour water in a container.
• Add 3-4 drop of food coloring to water.
• Put a white carnation in the water.
• Leave in water overnight.

How did the flower change? ____________________
1. Here’s a drawing of the leaf I found in the forest.

1. I found my leaf ________________________________

2. My leaf is ______ cm long and ______ cm wide.

3. My leaf has the colors ____________________________

4. My leaf feels like ________________________________

5. My leaf smells like ________________________________

6. What do Tlingit people use leaf designs for? __________

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Scientist ____________________________

Leaf Tour Guide

I went ________________________________

_____________________________ to gather leaves.

I picked up _______ leaves.

Here’s a drawing of my leaf collection.

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Leaf Tour Guide

1. Choose your favorite leaf from you leaf collection.
2. Describe the color and shape of your leaf _________________________

3. Trace your leaf of the grid below.

4. Leaf length _________ Leaf wide ______ Leaf area________ squares

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How We Make Labrador Tea

We pick the Labrador Tea leaves in the late summer.

We boil them in water for about 5 minutes.

We put the tea through a strainer into a cup and add one spoon of lemon juice and one spoon of honey.

Then we drink it. Yummy!
Kayaani – Plant Unit
Lesson 9 – Activity #1

Scientist __________________________

Observing Bulbs

Using the wild rice bulb you gather on your field trip use your senses to observe your bulb. Draw and describe what it looks like and how you would prepare it for eating.

1. Observation
   My bulb is a ____________________________

   It looks ____________________________

   It smells ____________________________

   It feels ____________________________

2. I prepare my bulb for eating by __________________________

   __________________________

Here’s a drawing of my bulb.

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Here’s a drawing of the flower I found in the forest.

My flower has ________ petals

The petals are colored ________

__________________________

The center is colored ________

__________________________

My flower smells like ________

__________________________

What are flowers for?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
My Plant Study Recipe Book

Name ____________________________________________

Date ____________________________________________

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Draw the plant.

Write the recipe.

1. __________________ ____________________________________________
   __________________ ____________________________________________

2. __________________ ____________________________________________
   __________________ ____________________________________________

3. __________________ ____________________________________________
   __________________ ____________________________________________

4. __________________ ____________________________________________
   __________________ ____________________________________________

5. __________________ ____________________________________________
   __________________ ____________________________________________

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How We Make Rose Hip Tea

First, we pick rose hips. We pick them when they are red and plump.

We take off the stems and brown, dried sepals.
If we want to save the rose hips for the winter, this is when we dry them in
the oven with very low heat.

Then we boil the rose hips in water until they are soft. We use about 5 rose
hips for each cup of tea.

We put the tea through a strainer into a cup and add one spoon of lemon
juice and one spoon of honey.

Then we drink it. Yummy!

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Building on Excellence (2005) grants from the U.S. Department of Education. However, the contents do not necessarily
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K’wálx – Fiddlehead Fern

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Color and paste the parts to a piece of construction paper to make fiddlehead ferns. Label the parts of your plant. Draw and color the fern’s environment.

<table>
<thead>
<tr>
<th>Língit</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>k'eikaxwéin</td>
<td>flower</td>
</tr>
<tr>
<td>a kadix'i</td>
<td>stem</td>
</tr>
<tr>
<td>kayaaní</td>
<td>leaf</td>
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<tr>
<td>xaat</td>
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Kóox - Chocolate Lily
Color and paste the parts to a piece of construction paper to make a chocolate lily. Label the parts of your plant. Draw and color the chocolate lilies surroundings.

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<thead>
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<tbody>
<tr>
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<td>kayaani</td>
<td>leaf</td>
</tr>
<tr>
<td>tukaxaadi</td>
<td>bulb</td>
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S’axt’ – Devil’s Club
Color and paste the parts to a piece of construction paper to make a devil’s club. Label the parts of your plant. Draw and color the devil’s club surroundings.

<table>
<thead>
<tr>
<th>Lingit</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>keikaxwein</td>
<td>flower</td>
</tr>
<tr>
<td>a kadix'i</td>
<td>stem</td>
</tr>
<tr>
<td>kayaani</td>
<td>leaf</td>
</tr>
<tr>
<td>xaat</td>
<td>root</td>
</tr>
<tr>
<td>a daak'ats'i</td>
<td>thorn</td>
</tr>
</tbody>
</table>

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S’ikshaldéen – Hudson Bay Tea

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Color and paste the parts to a piece of construction paper to make Hudson's Bay Tea. Label the parts of your plant. Draw and color the devil's club surroundings.

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<thead>
<tr>
<th>Lingit</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>k'ejaxwein</td>
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<td>stem</td>
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<tr>
<td>kayaani</td>
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<td>xaat</td>
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K’inchéiyi – Rosehips

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Color and paste the parts to a piece of construction paper to make a devil’s club. Label the parts of your plant. Draw and color the rose surroundings.

<table>
<thead>
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<th>Língit</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>k'eikaxwéin</td>
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</tr>
<tr>
<td>kayaani</td>
<td>leaf</td>
</tr>
<tr>
<td>xaat</td>
<td>root</td>
</tr>
<tr>
<td>a daakak'ats'i</td>
<td>thorn</td>
</tr>
<tr>
<td>k'inchéiyi</td>
<td>rosehip</td>
</tr>
</tbody>
</table>

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Color and paste the parts to a piece of construction paper to make Indian Celery. Label the parts of your plant. Draw and color the Indian Celery’s environment.

<table>
<thead>
<tr>
<th>Lingit</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>k’eilaxwéin</td>
<td>flower</td>
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<tr>
<td>a kadíx’i</td>
<td>stem</td>
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<tr>
<td>kayaani</td>
<td>leaf</td>
</tr>
<tr>
<td>xaat</td>
<td>roots</td>
</tr>
<tr>
<td>a daakak’ats’i</td>
<td>thorn</td>
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</tbody>
</table>

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Kóox Tukaxaadí
Wild Rice Bulb

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Kóox Kayaaní
Chocolate Lily Leaf

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Kóox K’eikaxwéin
Chocolate Lily Flower

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S’áxt’
Devil’s Club

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S’áxt’ Kadíx’i
Devil’s Club Stem

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K’wálxsha
Fiddlehead

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X’unéil’ Kadíx’i
Rose Stem

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X’unéil’ Kayaaní
Rose Leaf

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X’únéil’ K’eikaxwéin
Rose Flower

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X’áal’
Skunk Cabbage

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Yaana.eit Kayaaní
Indian Celery Leaves

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T’óok’ Kayaaní
Nettle Leaves

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Tséit K’eikaxwéin
Silverweed Flower

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Lesson 1
Vocabulary
1. plants ka.éix át
2. root xaat
3. stem a kadíx’i
4. leaf kayaaní
5. flower k’eikaxwéin
6. seed at x’aakeidí
7. berry/fruit tléikw

Phrases
8. This is the plant’s (root ). Ka.éix át (xaadi) áwé.
9. This is the plant’s (stem). Ka.éix át (a kadíx’i) áwé.
10. This is the plant’s (leaf). Ka.éix át (kayaaní) áwé.
11. This is the plant’s (flower). Ka.éix át (k’eikaxwéini) áwé.
12. This is the plant’s (seed). Ka.éix át (at x’aakeidí) áwé.
13. This is the plant’s (berry). Ka.éix át (tléigu) áwé.
14. Chocolate Lily (Rice Lily) kóox
15. Fiddlehead Fern k’wálx
16. Hudson Bay tea s’ikshaldéen
17. Silverweed tséit
18. Devil’s club s’áxt’
19. Indian Celery yaana.eit
20. Nettle t’óok’
21. Rose x’unéil ch’eeni
22. Skunk cabbage x’áal’

Lesson 2
Vocabulary
23. little plant kayaaní k’atsk’u
24. embryo a tuyadi
25. seed coat at x’aakeidí daakanóox’u
26. stored food du x’ashagóon
27. soaked seed at x’aakeidí kakél
28. dry seed at x’aakeidí kaxúk

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Phrases
29. Let's look at seeds!  At x'aakeidí kagaxtooltéen!
30. Look at the seed.  Wé at x'aakeidí yan kalaťín.
31. Measure the seed.  Nakaa wé at x'aakeidí.
32. Split/Break the seed in half.  Wooshdáx nawaal' at x'aakeidí.
33. Put the seed in water.  Heentaax' yei na.oo wé at x'aakeidí.

Lesson 3
Vocabulary
34. root  xaat
35. stem  a kadíx'i
36. sprout  at shaadí

Phrases
37. How many seeds are there?  X'oon sá yatee wé at x'aakeidí?
38. We'll watch our seed grow.  Haa at x'aakeidí gaxtulatéen.
39. When will it's leaves grow?  Gwatgeen sá á kayaaní kkgwa.aa?
40. When will it's roots grow?  Gwatgeen sá a xaadí kkgwa.aa?
41. The plants are growing.  Kayaaní kei kana.éin.
42. We'll measure the stem everyday.  Gaxtookaa a kadíx'i ch'a tkáték yageeyí.
43. We'll measure the roots everyday.  Gaxtookaa a xaadí ch'a tkáték yageeyí.

Lesson 4
Vocabulary
44. pot  k'wátl
45. potting soil  kút'l'kw
46. book  x'úx'
47. sprout  at shaadí

Phrases
48. Put the soil in the pot.  K'wátlkx' i kaa yei na.oo wé kút'l'kw.
49. Plant the seeds.  Kanaháa wé at x'aakeidí.

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50. Keep the soil moist.  

Ch’a tlaakw kanaltl’ák’x wé kútl’’kw.

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

Lesson 5
Vocabulary

52. fern  k’wálx
53. fern root  k’wálx xaadí
54. fern frond  k’wálx kayaaní
55. fiddlehead  k’wálx shá
56. spores  shkaxéeni
57. dig up  kei kayhaa
58. shovel  kutl’ídaa
59. wash (clean)  na.óos’
60. cook (steam)  kalakásh
61. salt  éii’
62. butter  gwáata

Phrases

63. Ferns have seeds called spores.  K’wálx x’aakeidí a shakaxéeni yei duwasáakw.
64. Can you find the spores?  Wé shakaxéeni gé a káx kukgeeshee?
66. Let’s dig up a fern plant.  Kwálx kei kagatoosahaa.
67. Let’s pick fiddleheads.  Kwálxshá gatoos.een.
68. Let’s wash fiddleheads.  Kwálxshá naxtoo.óos’.
69. Let’s steam fiddleheads.  Kwálxshá kaxlakásh.
70. Let’s eat fiddleheads.  Kwálxshá gaxtooxaa.
71. Eat.  At xá.

Lesson 6
Vocabulary

72. indian potato  tsáats
73. tap roots (fat roots)  k’ikaxaadí
74. fibrous roots (thin roots)  s’ú
75. sweet potato  tséit

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76. onion yeiltáxí
77. carrot s’ín
78. turnip tl’aađéin aa
79. draw a yahaayí kayshaxít

Phrases
80. Draw the root. Wé xaat yahaayí kayshaxít.
81. Measure the root. Nakaa wé xaat.

Lesson 7
Vocabulary
82. tubes a tóonáx héen naadaayí át
83. celery tukatási
84. rhubarb tl’aaak’wách’
85. asparagus súkkadzi
86. broccoli aas keikaxwein
87. Devil’s Club s’áxt’
88. thorny outer bark at daakak’áts’í looní
89. green inner bark - cambium layer at láx’i
90. scrape xáas’
91. peel/strip a daaka.ádi
92. boil satá
93. pot k’wátl
94. flower k’eikaxweín
95. bead kawóot

Phrases
96. Cut the stem. Wé at kadix’i aax nalxash.
97. Scrape the outer bark. A daa looní aax xáas’.
98. Cut the cambium into strips. A daaka.ádich at láx’i nalxash.

Lesson 8
Vocabulary
100. green leaves kayaaní
101. food At xá
102. nettles took’
103. tea cháayu
104. veins in the leaves kayaaní téet’i

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105. smooth  
106. rough  
107. long  
108. narrow  
109. wide  
110. short  
111. needle-like leaves  
112. jagged edges

Phrases

113. Plants make their own food.  
114. We eat plant leaves.  
115. We eat lettuce leaves.  
116. We eat spinach leaves.  
117. We eat cabbage leaves.  
118. We eat nettles.  
119. We make tea from leaves.

Lesson 9

Vocabulary

120. Chocolate lily (Indian Rice)  
121. bulb/rhizome  
122. bulblet (rice-like kernel)  
123. garlic bulb  
124. onion bulb  
125. flower bulb

Phrases

126. My bulb looks like an (onion).  
127. My bulb smells like an (onion).  
128. My bulb feels like an (onion).  
129. A Chocolate Lily has a brown flower.  
130. A Chocolate Lily has a bulb.  
131. We can cook the rice.

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Lesson 10

Vocabulary

132. flower  
133. petals  
134. sepal  
135. pollen  
136. seed  
137. fruit/berry  
138. bees  
139. bird  
140. butterfly

Phrases

141. Lets find the parts of a flower.  
142. Look for the (petals).  
143. I found the (petals).  
144. I found the (sepal).  
145. I found the (pollen).

Lesson 11

Vocabulary

146. wild rose bush (small rosehips)  
147. sitka rose bush (large rosehips)  
148. rosehips  
149. fruit/berry  
150. seed  
151. thorn  
152. honey

Phrases

153. I am picking rosehips.  
154. It's thorns are sharp.  
155. Ouch! I got poked!  
156. How many rosehips do you have?  
157. I have three.  
158. I like rosehip tea.  
159. It's delicious!

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