TRADITIONAL TRANSPORTATION: DUGOUT CANOE GR: 3-5 (LESSONS 4, 5, 6)

Elder Quote/Belief: "Summer came and they would go around by boat. They made their first dugout canoes. They chopped down large cottonwood, and fashioned that into a canoe. They went in that into Eyak Lake. Then they tried spruce instead of cotton wood. That too was good. They carved large boats out of spruce." -Anna Nelson Harry Recorded in 1965, Yakutat.[i]

Grade Level: 3-5

Overview: The Eyak carved dugout canoes from cottonwood, spruce and cedar from the Copper River Delta. The Eyak canoe was largely adapted for the delta but inspired by the larger, more sea worthy canoes of the Tlingit.

Standards:

AK Cultural:	*AK Content Geography*:	*CRCC*:
E4: Culturally-knowledgeable students demonstrate an awareness and appreciation of the relationships and processes of interaction of all elements in the world around them. A student should determine how ideas and concepts from one knowledge system relate to those derived from another knowledge system.	**E.** A student should understand and be able to evaluate how humans and physical environments interact	**MC1**: Different kinds of wood have different qualities and different uses; wood can be obtained from the forest and from driftwood.

Lesson Goal: Learn about the carving and steaming of dugout canoes. Students will carve a dugout canoe from soap with carving tools.

Lesson Objective(s): Students will:

- Learn Eyak and Sugt'stun vocabulary for dugout canoe
- Learn the uses and purpose of the dugout canoe
- Learn about cultural groups who also carved and used the dugout canoe for travel.

Vocabulary Words:

English:	Sugt'stun Dialects Prince William Sound:	Lower Cook Inlet:	Eyak:
Canoe	pattakun	pattakun	AXAkih
Spruce	nupuk	nupuk	lis, AdAlis
Adze			XAt'aa
Steam	arillaq	arillaq	dAq'aagdaatl

Materials/Resources Needed:

- If possible, invite an Elder or Recognized Expert from the Region to share their traditional ecological knowledge (TEK) and expertise to enrich the lesson(s).
- Soap bars
- Plastic Carving Tools
- Model of Dugout Canoe
- Laminated photos of Dugout canoe.

Books/Documents:

- *Qayaqs & Canoes; Native Ways of Knowing* by Jan Steinbright; pages 101-119
- Article, *"Qayaqs and Canoes"* http://www.echospace.org/articles/273/sections/665.html

Websites/videos:

- The JayHawk Institute Canoe Legacy Project :history and background of the dugout canoe
    - https://vimeo.com/83392411
- Sea Alaska Canoe Project video https://vimeo.com/195491983

Teacher Preparation:

- Invite an Elder or Recognized Expert that could share their traditional ecological knowledge (TEK) and expertise on the lesson content.
- Before the Elder or Recognized Expert arrives, please review with all of the students, ways to show respect for the Elder during their visit.
- Collect the materials and resources needed for lesson.
- Prepare working groups of 4 to 6 students whom will share soap carving tools.
- Make sure to have enough bars of soap so each student will receive one bar of soap to carve.
- Gather the equipment for the steam experiment; a hot plate, a large pot for water, water vessel and thermometer.
- Display the *Traditional Transportation Watercraft* roll up banner of dugout canoe.
- Make Copies of Echo's article for each student to read.
    - http://www.echospace.org/articles/273/sections/665.html
- Set up Smartboard with links to the videos listed above.
    - The Jay Hawk Institute Canoe Legacy Project (14 video series) https://vimeo.com/83392411
    - Sealaska Canoe Project video of carver Steve Brown on how to make a dugout canoe. https://vimeo.com/195491983

Opening: There are three distinct styles of boats that were made by the Sugpiaq and Eyak people of the Chugach Region. These styles are the qayaq, anyaq and dugout canoe. Today, we are going to learn more about the dugout canoe made by the Eyak people. One major component to making the dugout canoe, besides the carving out of a log, was the use of steam.

Steam allowed the wood of the carved canoe to soften and bend. This process allowed the builders to open the carved log up wide to make the canoe more sea worthy. We will research the use of steam for the shape and designs of Eyak, Tlingit and Pacific Coast Indians used on their dugout canoes.

Once we review these designs we will be carving a dugout canoe from a bar of soap using the canoe model as an example.

Activities:

Class I:

1. Gather students to view model and poster of dugout canoe. The model can be passed around to see the craftsmanship it took to build the canoe.
2. Students will watch the recommended videos on smartboard of the carving and steaming processes.
   Video #1: SeaAlaska Canoe Project **https://vimeo.com/195491983**
   Video#2: JayHawk Canoe Legacy Project **https://vimeo.com/83392411**

3. Following the viewing of the short videos. Ask the students to answer the following questions:
   a. What creates steam?
   b. Where else do you see steam? (Ask for a couple examples)
   c. Describe how the Eyak would "traditionally" created steam for the use of opening up their canoe.

Class II:

1. Making steam in your classroom. In this experiment you will need a hot plate, a large pot for water, water vessel. Thermometer for testing the temperature of steam vs. boiling water. Questions for students to think about and understand steam:
   a. What are the different forms of water? (Solid, liquid and gas). Ask for examples.
   b. How does water change? Liquid to gas, liquid to solid and back.
   c. Prepare water to boil on hot plate, have students make observations while the boiling process is happening.
   d. Explain when the temperature of liquid water gets to 212 degrees Fahrenheit it is at its boiling point and the bubbles form and steam (gas) begins to escape.
   e. Steam is the gas state of water. How hot do you think is the steam? *For additional information and experiments see the link below and/or attached lesson.
      a. http://www.ankn.uaf.edu/publications/Alaska_Science/Steaming.html

Class III:

1. Following the reading, explain to the students they will be making a dugout canoe from a bar of soap. Students will use provided pictures and dugout canoe model to help with their carving design.
2. Explain the safety rules when using carving tools.
   a. Provide each student with a bar of soap and plastic carving tools.
   b. Using the included plastic tools students can carve and hollow out their bar of soap to make a dugout canoe.

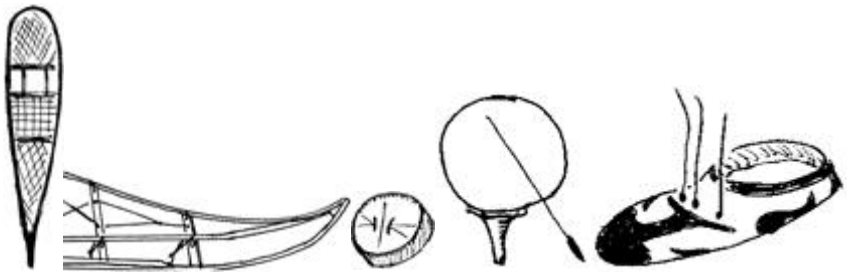
Assessment:

- Students can correctly retell the ECHO Space article *"Qayaq and Canoes"* they read.
- Students can describe the dugout canoe steaming process and uses of steam.
- Students successfully complete the dugout canoe soap carving.

[1] Eyak Legends of the Copper River Delta, Alaska; page 104; Eyak History and Language by Anna Nelson Harry 1965 Yakutat

http://www.ankn.uaf.edu/publications/Alaska_Science/Steaming.html
Alaska Science Camps, Fairs & Experiments
TO ORDER THIS PUBLICATION:
Contact the ANKN offices at 907-474-1902 or email publications@ankn.uaf.edu.

Steaming

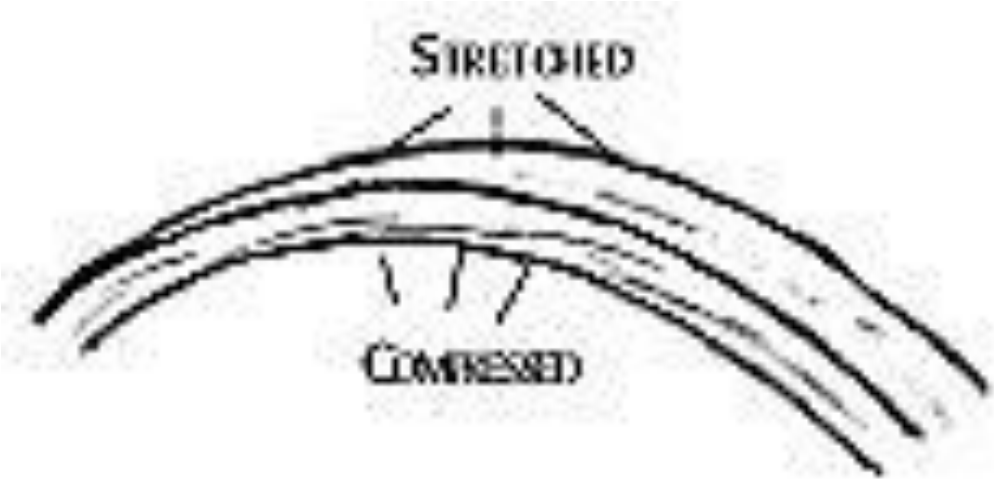


For untold centuries old timers have been bending natural materials. Some materials bend more easily than others. We have always been looking for ways to improve the bending of natural materials.

The most common traditional applications of bending are: Aleut bentwood hats, snowshoes, drum frames, canoe ribs and sled parts.

When we bend materials, there are two stresses.

- The inside of the bend is being compressed.
- The outside of the bend is being stretched.



Obviously, the thinner the material is, the easier it is to bend as the inside is compressed less and the outside stretched less.

Old timers spent much time looking for the choice piece of wood that would not break when it was bent.

Steaming

When wood is dry it isn't very flexible. Wetting the wood helps the bending process. Steaming helps even more. However, there are advantages and disadvantages of each. Excessive steaming weakens the wood.

Many people wrap the wood with a hot steamy towel as it comes out of the steamer. This keeps it from drying and cooling until bending is complete.

It is important to bend the wood gently, flexing it gradually, being careful not to bend too much in one place. If there is a spot that doesn't want to bend, we put it over our knee at that place and gently flex it. If it still doesn't bend, we take a timeout, and thin it at that spot with a hand plane or knife.

WRAPPING TO PREVENT SPLITTING

If the fibers start to split off, quickly wrap that place with string, keeping the fibers intact. Continue bending gently.

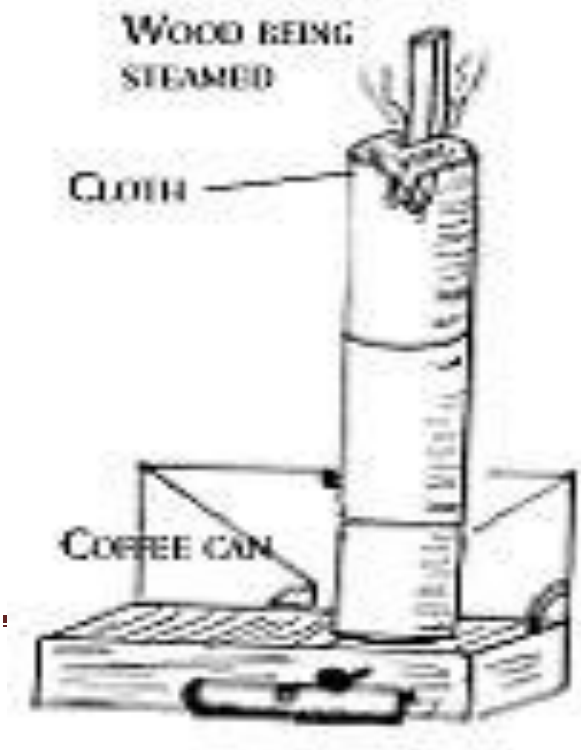
EXPERIMENT

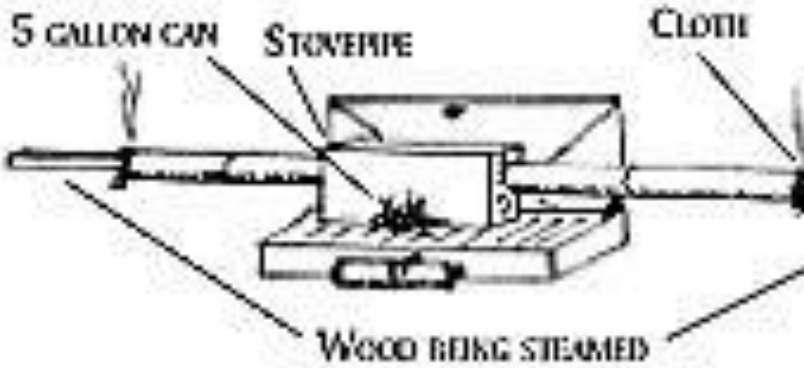
Cut or split identical pieces of green wood about two feet long. Identify which side is from the outside of the tree and which side from the inside. Try bending two ways: inside of tree on the outside of the bend, and outside of the tree on the outside of the bend. Which way seems to bend the easiest? Which way breaks more easily than the other.

EXPERIMENT: EASE OF BENDING

Cut or split identical pieces of green wood. Try to bend the first piece. Try to bend a second piece after it has been soaked in cold water for a time. Try a third piece after it has been soaked in hot water and a fourth piece after it has been steamed. What differences do you notice?

You can make a steamer like either of the ones illustrated here.





Be careful, as steam and hot water can inflict severe burns. Use gloves and eye protection. Some people say the

steamer needs to have a great deal of water, and to use a drum.

Try bending different materials, birch, spruce, willows, and other natural materials after they have been steamed or soaked in hot water. Many people have spent hours shaping a piece of wood, only to have it crack before taking shape. Learn how to steam on scraps first. Then steam and bend carved pieces.

Traditional Steaming

In parts of Alaska, steaming was done by digging a pit, and making a fire in the pit. The ashes were scraped from the hole. The wood was wrapped in seaweed or wet grass. The wood was placed in the hole and buried with hot dirt and topped with hot coals, the moisture from the seaweed was heated by the dirt and coals, and the wood rendered soft and pliable.

EXPERIMENT: WEAKENED BY STEAMING?

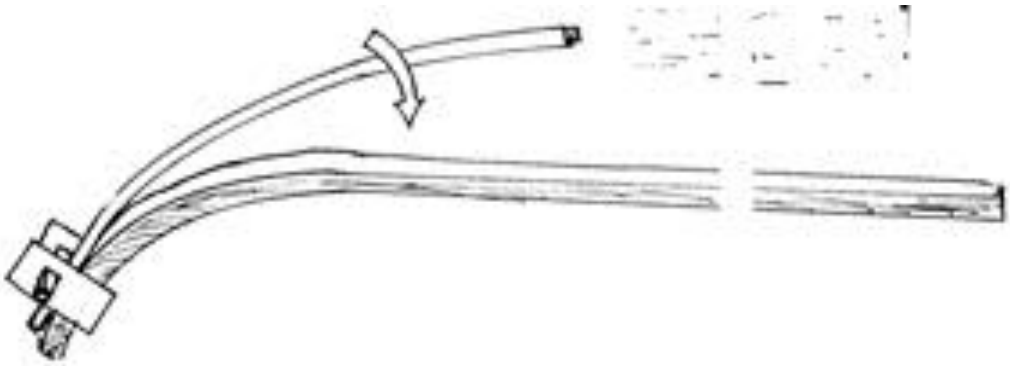
Cut or split two identical pieces of wood. Soak one in very warm water, bend it, and let it dry. Steam the other piece for quite a while, and bend it and let it dry. Test both pieces. Is the piece that was steamed for a long time weaker or stronger than the piece that was only soaked in warm water?

Since it is impossible to find two pieces of wood that are identical, it might be best to try to bend four pieces, two in warm water and two steamed.

Bending Jig

When wood is bent, we often need a form or shape to bend the wood upon. Many such forms or jigs are possible. Below is a jig to bend sled runners. The runners are clamped to the jig until they dry. Slow careful drying prevents cracking.

Snowshoes are bent around a jig that shapes them to the proper size and form.



Aleut bentwood hats are often bent around a frame, and then the pieces are held together with clamps. The wood is soaked in a wide pan of hot water, not steamed.

Drum makers often cut very thin strips of wood, steam them, and then bend them around a circular jig, gluing the different layers together into a very strong round frame.

BENDING A DRUM FRAME IN THIN STRIPS
THAT ARE GLUED TOGETHER.

Following information taken from ECHO Education through Cultural & Historical Organizations http://www.echospace.org/articles/273/sections/665.html

Qayaqs and Canoes

Dug-out canoes

Haida-style dugout canoe in the water

This 20-foot red cedar Haida-style dugout canoe, named "Against the Wind," is fully functional with paddles representing the Eyak, Tlingit, Haida, and Tsimshian cultures of Southeast Alaska. This boat was the first in more than 100 years to have been built following the traditional style.

Without blueprints, squares, levels, compasses, or curves, the complex shapes of the bow and stern were chopped out with an adze so the canoe would cut the water cleanly. The sea mammal hunters, halibut fishermen, and traders needed a vessel that would glide swiftly and noiselessly through the water.

Long ago, when guests arrived in ocean-going canoes like this one, they announced themselves in song, and host villagers answered them with another song, followed by dancing, feasting, and speeches.

Alaska Native Languages

The Haida people have historically lived in the dark purple area of the map -- part of which is in Alaska, but most of which is in British Columbia, Canada. Similar canoes were used by the Eyak (yellow on the map), Tlingit (orange), and Tsimshian (green), all in Southeast Alaska. Although the languages of these people were unrelated to each other, their material culture and social structure were similar.

The canoes were so seaworthy that they were used not just for interisland voyages to visit relatives or allies, but also to wage war and to engage in trade missions over hundreds of miles. In fact, dugout canoes plied the waters between Southeast Alaska and Kodiak Island in the days before the coming of Europeans.

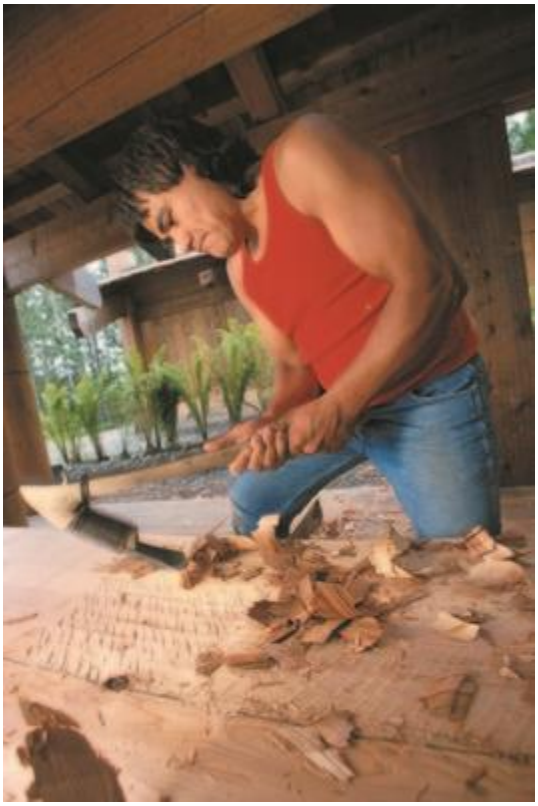
Wayne Price and Vanessa Pazar

Master boat builder Wayne Price (Ian.xi) an Eagle Wooshkeetaan Tlingit who was brought up in Haines, Alaska, is shown here with a model of his boat. Behind him is his apprentice, Vanessa Pazar. "Against the Wind" was the fifth dugout canoe Wayne had built. He explained,

"Every log I've been on is very different. . . . I went to Wrangell and actually found out where the old-timers had picked their trees from. I went and I picked a tree. . . . I'm still learning about the dugout canoe. . . "

"[Vanessa] didn't know anything about carving a canoe, but I knew she was a real hard worker. . . . We had ten to twelve hours a day on a regular basis and we only had two days off in sixty days."

Vanessa (Kaalkeis', an Eagle Kaagwaantaan) noted, "When I think of the traditional ways, sometimes I just have to sit back and go, 'Whoa, they did this with stone tools.' . . . I'm the first female canoe carver for this style and I get to see thousands of females come to this place every day and every one of them is gung-ho for it. So I know there is going to be some future women canoe carvers out there."



Tlingit carver Wayne Price

Wayne explained the canoe-building process, after the blessing of the log: "The first cut I made was the very bottom cut. . . . We started chopping on her and first thing we noticed is that the blades were a lot tougher than the adze handles. We smashed four or five handles in the first week."

After fashioning the outside shape, Wayne and Vanessa began the eight-day process of hollowing out the log. Then, came the steaming process to expand the gunwales from the round

shape of the log. They filled the boat with salt water and placed hot lava rocks inside to make steam. Wayne noted, "George Bennett brought about a thousand pounds of lava rocks from Sitka for the steaming."

This process expanded the canoe's width eight inches, flattened the bottom, and increased its height at the bow and stern by six inches.

Adze marks on Haida canoe

The entire surface of the boat was finished by hand. This photo shows Wayne's even adze marks. This distinctive texture is a hallmark of the dugout canoes of Southeast Alaska and the British Columbia coast.

"Against the Wind" Haida-style canoe

The finished boat, carved from a log donated by Sealaska Corporation, now hangs -- upside down to preserve its shape -- in the Alaska Native Heritage Center's foyer. It was painted traditional colors, red and black. During the summer of 2000, it was launched into the waters of Kachemak Bay, a triumphant end to a long process that extended from finding the log to its inaugural sail.