

## HONORING EYAK: FIRE DRILL GR: 6-8 (LESSONS 2-4)

**Elder Story:** Once a man went hunting. His canoe tipped over with him, He saved only himself and one stone axe. He landed on the shore. He had no way of making a fire and it was cold. In the evening some of his relatives came and landed. When they came they said, “enya’ (an expression of sympathy). The man jumped up and got mad at them. He knew they weren’t his own people. They were land otters disguised as people. He said, “You people here already? You’re not going to fool me.” He grabbed his axe and chased them away.

Next morning at daylight he found some dry punk and made a fire-drill and started a fire. He started to build a house. His axe wasn’t good enough to build a canoe and he was a long way from home. He was making a canoe at the same time. Every once in a while the Land-Otter People came disguised as his relatives.

After he built his house they came again. He had some pitch hanging up above the fire, drying. When everything was finished, some of these people came again.” He called them in the house. He pretended that he was fooled, that he believed them. He was going to kill them.

- ‘Where the Man Killed Lots of Land Otters’ as told by Galushia Nelson<sup>1</sup>

### **Grade Level: 6-8**

**Overview:** Fire is essential for warmth and food preparation and a variety of other subsistence uses such as making dugouts, splitting wood, and drying materials. But starting and maintaining a fire in a rain forest is challenging. When coals weren’t available, the Eyak traditionally relied on their skills with a fire drill.

### **Standards:**

<i>AK Cultural:</i>	<i>AK Content:</i>	<i>CRCC:</i>
<b>B1:</b> Acquire insights from other cultures without diminishing the integrity of their own.	<b>Geography B1:</b> Know that places have distinctive characteristics	<b>L1:</b> Students should understand the value and importance of the Eyak language and be actively involved in its preservation.

**Lesson Goal:** Students learn how the Eyak people had a variety ways to use fire and how they traditionally started fires by making and using a traditional fire drill.

**Lesson Objectives:** Students will:

- Review the varied uses of fire in traditional Eyak culture.
- Ready the materials needed to start a fire with a fire drill and attempt to do so.
- Learn the Eyak vocabulary listed below.

### **Vocabulary Words:**

English:	<a href="#"><u>Eyak</u></a>
fire (domestic)	<a href="#"><u>quu'e'd</u></a>
fire	<i>dAq'aag</i>
red (lit: It is like fire)	<i>dAq'aagga' ii't'eh</i>

**Materials/Resources Needed:**

- Elder or Recognized Expert to share how to make a fire drill/fire making
- Access to Computer Projection Screen
- Fire Drill Assembly/Fire Making Instructions Handout (See below) – 1 per student
- Rocks, palm-sized with indentations deep enough to hold drill cap – 1 per team
- Hearth boards (with two or three  $\frac{3}{4}$ " diameter shallow sockets) – 1 per team
- Drill Shafts ( $\frac{3}{4}$ " diameter) – 1 per team
- Curved branches ( $\frac{3}{4}$ " - 1" diameter) for bows – 1 per team (extras advisable)
- Nylon string – one 3-4' piece per team
- Small axes for branch and board collection – one per team
- Knives for whittling – one per team
- If hearth boards not pre-drilled -  $\frac{3}{4}$ " drill for hearth board drill shaft socket - one
- Tinder materials (dried grass, bark, twigs, moss) enough for one palm-sized ball per team
- Fire extinguisher
- Parent Permission slips
- Administration approval

**Books:**

- Birket-Smith, Kaj, & Frederica de Laguna. *The Eyak Indians of the Copper River Delta, AK.*
- Johnson, John F. C. *Eyak Legends: Stories and Photographs.*

**Web Resources:**

- [https://www.youtube.com/watch?v=ibaMy\\_WvhE0](https://www.youtube.com/watch?v=ibaMy_WvhE0) National Geographic – Fire Bow Drill Demo (4:01)
- <https://www.amazon.com/Primitive-Fire-Activity-Educational-Fire-boards/dp/B00CWQ9GIM> Commercial Fire Drill kit

**Teacher Preparation:**

- Administration approval for fire drill/fire making activity.
- Invite an Elder or Recognized Expert to share TEK on making fire drill/fire making.
- Review how to show respect to guests in the classroom with students.
- Make copies of Parent Permission slips for each student.
- Review Activity Plan and practice Eyak vocabulary.
- Determine whether students will gather the materials (stones, branches, tinder) to make a fire drill themselves or if they will be collected ahead of class ready to be assembled.
- If students will gather fire drill materials determine where they will do so. [*Note: cottonwood works well. Sort woods, such as pine should be avoided as it burns through before coals are formed.*] It may be necessary to allow some time to elapse between materials collection and fire drill assembly to ensure the materials are adequately dry.
- Student ability and the availability of a drill capable of drilling  $\frac{3}{4}$ " holes in the hearth board may be problematic. Arrangements for pre-drilled hearth boards may be desirable.
- Successfully igniting the tinder ball involves a lot of smoke before the fire catches. Consider whether this activity should be conducted outdoors or whether the exercise ends when the fire drills create some smoke (and then are doused).

### **Opening:**

Read introductory paragraphs from ‘Where the Man Killed Lots of Land Otters’ (See Elder Quotation above.) Discuss uses of fire in the traditional Eyak subsistence lifestyle.

Traditionally there was a central fire in their plank houses which served to heat the room and provide its main source of illumination. Each cook would retrieve a few coals and burning sticks for her own use so that there would be as many additional small fires as there were cooks.<sup>ii</sup> Fire was also integral to smoking and preserving foods and drying out resource materials such as pitch for use in waterproofing. Coals from these domestic fires would be banked and maintained so that people didn’t need to start a fire from scratch.

The Eyak people would carry a glowing coal between two pieces of punk (soft crumbly wood) when traveling though Abercrombie (US Army lieutenant traveling among the Eyak on a reconnaissance mission in 1885) noted that the Eyak used to carry a glowing coal between two pieces of punk though they did not take fire when hunting mountain goats.<sup>iii</sup>

Although they would carry coal with them, at times the coals could be doused or lost as in the story of the cap-sized hunter. Knowing how to start a fire with materials on hand was vital to survival. In addition to providing heat it was needed for hollowing out tree trunks for making dugout canoes and felling trees.

In 1741 George Steller (Naturalist aboard Bering’s voyage of exploration), the first European to observe an Eyak cooking site, wrote “*Beside the fire was “a wooden apparatus, with which, for lack of steel, they are in the habit of making fire by friction, just as in Kamchatka and other places in America:” in other words, a fire drill. The tinder was moss, “bleached white by the sun.”*”<sup>iv</sup>

We are going to make a fire drill and discover the skill level necessary to start a fire through friction.

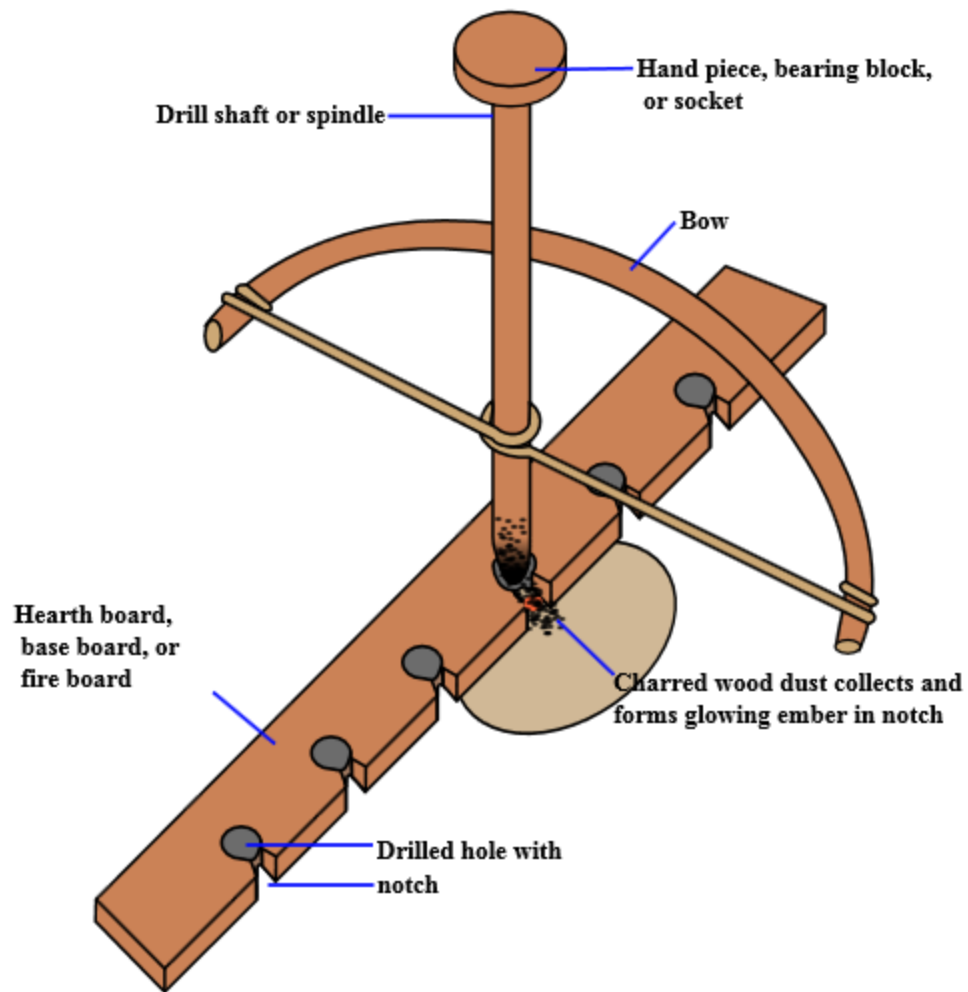
### **Activities:**

#### **Class 1:**

1. Ask students to have parents sign approval form to participate in activity.
2. Introduce the Elder or Recognized Expert if available.
3. Have the students watch National Geographic – Fire Bow Drill Demo (4:01)  
[https://www.youtube.com/watch?v=ibaMy\\_WvhE0](https://www.youtube.com/watch?v=ibaMy_WvhE0)

#### **Class II:**

1. Review fire bow drill parts (below or can click on) [Fire Bow Drill Components](#).



[https://commons.wikimedia.org/wiki/File:Bow\\_Drill\\_with\\_annotations.svg#/media/File:Bow\\_Drill\\_with\\_annotations.svg](https://commons.wikimedia.org/wiki/File:Bow_Drill_with_annotations.svg#/media/File:Bow_Drill_with_annotations.svg)





Hand Hold, Hearth Board (drilled sockets with one notched), Drill Shaft



Fire Bow with Nylon Cordage (traditionally sinew)

2. Field Trip to collect needed materials – All components should be dry so choose a dry day.
  - a. Collect curved branches ( $\frac{3}{4}$ " -1" diameter) with some 'bend' for bows;
  - b. Straight branches ( $\frac{3}{4}$ " diameter) for drills, and 'board' sections to serve as hearth board. [*Note: Cottonwood works well.*]
  - c. Collect palm-sized stones with indentation for Hand Holds (aka Bearing Blocks)
  - d. Select piece of bark or wood to transfer ember from hearth board to tinder.
  - e. Collect small quantities of dried grasses, twigs, bark, and moss for tinder.

3. When return to classroom with materials, have the students make a tinder ball.



➤ Rub dried grass, twigs, bark, moss together



➤ Form loose ball of tinder

4. Assign students to small groups of two to three people and distribute fire drill components.
5. Distribute Fire Drill Assembly Handout and review steps:
  - a. Debark the bow and drill shaft (can save shavings to add to the tinder ball).
  - b. Tie and stretch string (*traditionally sinew*) to form bow from curved branch.
  - c. Select the straightest foot long section of branch for the drill shaft and cut to length. Whittle top of the drill shaft into a point which rotates securely in the Hand Hold socket and bottom into a rounded end which will fit snugly into hearth board socket.
  - d. Level hearth board wood and drill two to three  $\frac{3}{4}$ " diameter shallow sockets. Carve narrow notch exit from one of the sockets.
6. Allow students time to assemble fire drills.



### **Class III:**

4. Once team drills are ready watch 'Fire Drill' video on [www.chugachheritageak.org](http://www.chugachheritageak.org).
5. Remind the students of the safety rules while trying to make fire.
  - a. Absolutely no horseplay.
  - b. Stay focused on task and attention to detail.
  - c. Be cautious and aware of surroundings, ensure no
6. Bring students outside to an area with gravel or cement and have a fire extinguisher at hand.
7. Review technique tips: Eyak elders described fire making to anthropologist Frederica de Laguna:

*"Fire was made by means of a fire board and a drill. Old Man Dude described both a hand and a cord drill. He said that it was customary for two persons to collaborate in making fire, one to operate the drill, the other to press down on the brace in which the drill revolved."*<sup>v</sup>
7. Have students follow the step-by-step process to make fire below.
8. Remind student that the fire starting success rates may vary. Use success or failure as the basis for a discussion of the skill level involved, and assessment of how to improve techniques. Ask students to do a write up answering the following questions:
  - a. *Where do the main challenges to start a fire lie?*
  - b. *Does the tightness of fit between drill and hand hold matter?*
  - c. *What about between drill and hearth board?*
  - d. *Does the dryness of fire drill components make a difference? Dryness of tinder?*
  - e. *How hard was it for the creation of embers?*
  - f. *What worked for the transfer of embers to tinder ball?*
  - g. *Notched hearth board socket vs. closed socket?*
  - h. *Did the drill work better with two people to operate drill vs. one?*
  - i. *What would you do differently?*
9. *Optional:* Try again AND/OR Demonstrate technique to another class or invited guests.

## STEP-BY-STEP PROCESS TO MAKE FIRE USING FIRE DRILL

- Wrap bow line around Drill Shaft.

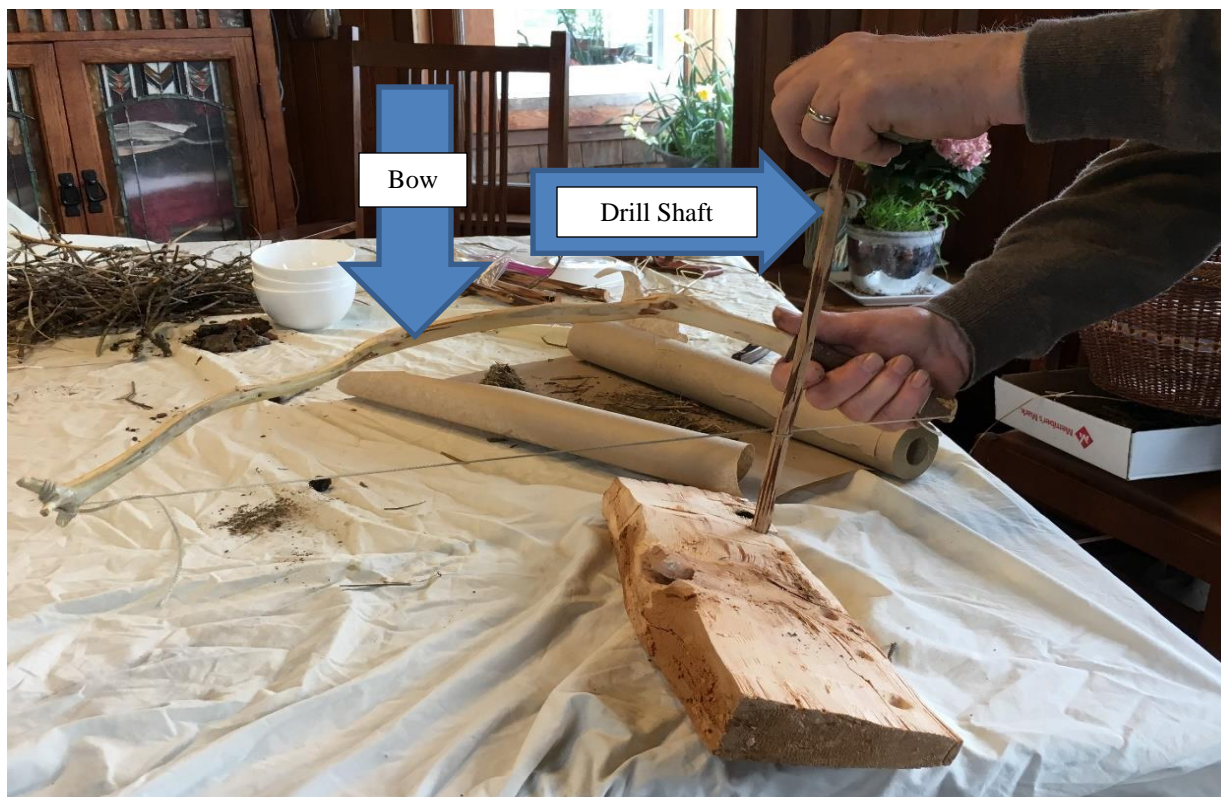


- Cap Drill Shaft with Hand Hold.



- Please note: Pressing down on the Hand Hold is vital; downward pressure is more important than speed. Try using the two-person method described by Old Man Dude.





- Maintain drill shaft as directly vertical as possible and pull bow back and forth to turn Drill Shaft.
- Charred wood dust collects in the hearth board socket and forms a glowing ember. This glowing ember needs to be transferred to the tinder ball either by placing a small piece of bark under the notch and tipping the ember onto it and then onto the tinder OR by gently tapping the ember from the hearth board socket directly into the tinder ball.
- Blow gently on ember to catch the tinder ball on fire.

#### **Assessment:**

- Students researched and assembled a traditional fire drill.
- Students attempted to start a fire and assessed skill levels required to do so.
- Students correctly pronounced the Eyak vocabulary words.

<sup>i</sup> Johnson, John F. C. *Eyak Legends: Stories and Photographs*. Chugach Heritage Foundation, 1988. p.36

<sup>ii</sup> Birket-Smith, Kaj, and Frederica de Laguna. *The Eyak Indians of the Copper River Delta, Alaska*. AMS Pr, 1976. p.94

<sup>iii</sup> Birket-Smith p.77

<sup>iv</sup> Birket-Smith p.345

<sup>v</sup> Birket-Smith p.77

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## **FIRE DRILL ASSEMBLY**

There are five components of a fire drill: Hand Hold, Drill Shaft, Bow, Cordage, and Hearth Board. Additionally, tinder will be required.

Assemble and modify these components as follows:

- Debark Bow and Drill Shaft and save shavings for tinder ball.
- Tie and stretch string (*traditionally sinew*) ends to form Bow from curved branch.
- Select the straightest foot long section of branch for Drill Shaft. Cut to length.
- Whittle top of Drill Shaft into a point which rotates securely in the Hand Hold socket.
- Level Hearth Board wood and drill two to three  $\frac{3}{4}$ " diameter shallow sockets to receive rounded Drive Shaft. Carve narrow notch exit from one of the sockets.
- Whittle bottom of Drill Shaft into a rounded end which fits snugly into Hearth Board socket.
- Make Tinder Ball by rubbing bark, dried grass, twigs, & moss and forming loose ball.
- Select piece of bark or wood to transfer ember from Hearth Board to Tinder Ball.

## **FIRE MAKING**

- Wrap bow line around Drill Shaft.
- Insert rounded end of Drill Shaft into Hearth Board socket and Cap Drill Shaft with Hand Hold.
- Pressing down on the Hand Hold is vital; downward pressure is more important than speed. Try using the two-person method described by Old Man Dude.
- Maintain drill shaft as directly vertical as possible and pull bow back and forth to turn Drill Shaft.
- Charred wood dust collects in the hearth board socket and forms a glowing ember. This glowing ember needs to be transferred to the tinder ball either by placing a small piece of bark under the notch and tipping the ember onto it and then onto the tinder, OR, by gently tapping the ember from the hearth board socket directly into the tinder ball.
- Blow gently on ember to help the tinder ball catch on fire.