Middle School Lesson: “Listen to Your Elders”

Overview:
This lesson discusses human behavior and its connection to the environment. It will work well in a unit about animal behavior. Note - it may be difficult for students to understand the Iñupiaq elders in the video at first so pause or replay the video as needed. As background information, it is important to note that whaling is an integral part of Iñupiaq society. Life of many communities revolves around the harvest of whales. The whale hunt has been conducted for thousands of years and is legally sanctioned through international and domestic law.

Time Frame/Audience: 75 min./middle school

Standards:
National Science Standards:
C.5 Students should develop an understanding of regulation and behavior

Alaska State Standards:
SC.2 A student should develop an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms.
SF.3 A student should develop an understanding of the importance of recording and validating cultural knowledge.
CSB.2 Students are able to make effective use of the knowledge, skills, and ways of knowing from their own cultural traditions to learn about the larger world in which they live.
CSE.8 Students are able to identify and appreciate who they are and their place in the world.

Objectives:
After instruction and practice students will:
1) identify, verbally and in writing, knowledge that they have gained from their elders
2) identify, in writing, Iñupiaq elder knowledge as shown in the video
3) compare and contrast, in writing, their local elder knowledge with that of the Iñupiaq elders
4) identify, verbally and in writing, whether elder knowledge about the local environment is helpful or harmful to their offspring

Materials:
-student handouts (see end of lesson)
-elder knowledge video (online)
-white board or similar
-computer
-projector
-slips of paper for the whale activity

Lesson:
1) explain that the behavior of an organism is affected by its environment, example = ravens who
eat carrion on the side of a highway, at first they may quickly fly away each time a car passes them but eventually they become used to that particular environment and rarely fly away or fly only a short distance with each passing car, they have become habituated to that environment - humans are not immune from this, they also behave in ways that are adapted to their environment, think of how people in downtown New York city obtain their food vs. how someone who lives in a rural Alaskan village in the boreal forest does

2) as humans become adapted to their environment they learn about that environment, they then pass that learned knowledge on to their offspring, one term for this is elder knowledge - write “elder knowledge” on the board, ask students to restate what you just said (i.e. define elder knowledge) and write this on the board under “elder knowledge”

3) ask students to think about elders (for the purposes of this exercise we will consider elders anyone their parents age or older) around them and the knowledge they have - as a class come up with things that students have learned from their elders, especially things that relate to the local environment (the best grocery stores to go to, the best berry picking spot, how to cut down a tree, how to fix a bike, etc.) - ask students to fill in the “local elder knowledge” portion of their worksheet

4) partner students and explain that we will now watch a short video about Iñupiaq elder knowledge in northern Alaska, the students' job is to watch closely for elder knowledge discussed or shown in the video as they will have to write down what the elders taught after the video - play the video

5) allow students to work in their pairs and to answer the question about the similarities and differences between their local elder knowledge and the Iñupiaq elder knowledge

6) ask students, is elder knowledge helpful or harmful when it comes to their offspring's survival, allow for discussion

7) as time permits = explain that we will now do an activity which will help to determine if elder knowledge is helpful for offspring survival – remind students that the Iñupiaq whaling captain talks about the direction in which to look for whales when it is time to hunt them, remind students that whales are an important food source for the Iñupiaq people

8) activity rules =
-need two students in the front of the room, one will be the timekeeper and one will watch the 2 groups
-need one student to represent the whale
-break remaining students into two groups, one group will represent offspring that gained elder knowledge and one group will represent offspring that did not get elder knowledge
-each student in the group with elder knowledge will receive slips of paper telling them the direction in which the whale will be coming from (i.e. the back corner of the room where the teacher's desk is), the other group will receive nothing
-all students must face the front of the room with their eyes closed, student representing the whale will move, very quietly, to the correct part of the room, teacher will call 1,2,3 open your eyes
-timekeeper will immediately record time and students in the groups must immediately move their bodies to face where the whale is coming from, they have 3 seconds for this
-timekeeper will call time and they and the other student will count the number of people who “found” the whale in each group (bodies must be fully faced towards the whale), write the number for each group on the board
-repeat 2 more times, each time the group with elder knowledge will get a different slip of paper noting the location of the whale, note that the students without elder knowledge may begin to quickly look at the group with elder knowledge to know the location of the whale, this would help to show that elder knowledge is helpful when it comes to survival/finding food

9) bring class back together and ask whether elder knowledge seems helpful or harmful to offspring survival, allow them to answer the last question on the worksheet, collect the
worksheets

Assessment:
Monitor student understanding as they discuss the knowledge gained from their elders and as they write down the Iñupiaq elder knowledge. Ensure understanding as they compare and contrast the elder knowledge and as they conduct the activity. Collect the worksheets.

Extension Activities:
-Students could research the elder knowledge of other Alaska Native groups using the Alaska Native Knowledge website at: http://www.ankn.uaf.edu/

-Ask a local elder to come and speak to the class about their knowledge.
Elder Knowledge

Using note format, write down the knowledge gained from your local elders and from Inupiaq elders.

<table>
<thead>
<tr>
<th>Inupiaq Elder Knowledge</th>
<th>Local Elder Knowledge</th>
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<tbody>
<tr>
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Compare and contrast the Inupiaq elder knowledge with knowledge passed on to you from your local elders. Use complete sentences.

Does elder knowledge seem to help or hurt their offspring’s survival? Use a complete
**Elder Knowledge**

Using note format, write down the knowledge gained from your local elders and from Iñupiaq elders.

<table>
<thead>
<tr>
<th>In order of appearance in the video</th>
<th>Local Elder Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) picking the correct spot for whaling</td>
<td>Answers will vary.</td>
</tr>
<tr>
<td>2) how to talk about the whale</td>
<td></td>
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<tr>
<td>3) how the location of the ice has changed over time</td>
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<tr>
<td>4) when to whale (springtime)</td>
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<tr>
<td>5) current can erode sea ice during whaling</td>
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<tr>
<td>6) where to find the safest sea ice (1st pressure ridge from the shore)</td>
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<tr>
<td>7) what pressure ridges are</td>
<td></td>
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<tr>
<td>8) pressure ridges can be dangerous</td>
<td></td>
</tr>
</tbody>
</table>

Compare and contrast the Iñupiaq elder knowledge with knowledge passed on to you from your local elders. Use complete sentences.

Answers will vary.

Does elder knowledge seem to help or hurt their offspring’s survival? Use a complete sentence.

Elder knowledge seems to help offspring’s survival.
High School Lesson: “Knowledge Comes In Many Forms”

Overview:
This lesson allows the students to practice the scientific method and would work well for any science class in which the students need a review of the scientific method. Note - it may be difficult for students to understand the Iñupiaq elders in the video at first so pause or replay the video as needed. As background information, it is important to note that whaling is an integral part of Iñupiaq society. Life of many communities revolves around the harvest of whales. The whale hunt has been conducted for thousands of years and is legally sanctioned through international and domestic law.

Time Frame/Audience: 60 min./high school

Standards:
National Science Standards:
A.1 Students should develop an understanding of the abilities necessary to do scientific inquiry.
A.2 Students should develop an understanding about scientific inquiry.

Alaska State Standards:
SA.1 A student should develop an understanding of the processes of science used to investigate problems, design and conduct repeatable scientific investigations, and defend scientific arguments.
SA.3 A student should develop an understanding that culture, local knowledge, history, and interaction with the environment contribute to the development of scientific knowledge, and local applications provide opportunity for understanding scientific concepts and global issues.
SF.2 A student should develop an understanding that some individuals, cultures, and societies use other beliefs and methods in addition to scientific methods to describe and understand the world.

Objectives:
After instruction and practice students will:
1) verbally identify the difference between experimental knowledge and observational knowledge
2) practice the scientific method by creating a written controlled experiment

Materials:
-computer
-projector
-elder knowledge video (online)
-whiteboard or similar

Lesson:
1) hook = have the scientific method written down on the board, observation to hypothesis to experiment, etc. - ask students what this is
2) remind students that much of science relies on an experimental method to obtain knowledge
about the world around us – we observe, then create a hypothesis, then design a controlled way to test that hypothesis, we observe and analyze the data and from there either realize that the hypothesis is not supported and it is back to the drawing board or find that the hypothesis is supported – we use correlation and causation

3) sometimes it isn’t possible to create a controlled experiment (think some ecology studies in which conditions cannot be copied in the lab), then scientists may rely on observational knowledge in which they observe over a long period of time

4) explain that some people and cultures also use an observational method to obtain knowledge about the world around them – they may not know an exact cause of why something is happening but by observing over time they are able to predict with great accuracy what will happen in the world around them

5) explain that we will now watch a video which illustrates observational knowledge, this video is about the Iñupiaq people of northern Alaska – the students’ job is to note (on a sheet of paper) the observational elder knowledge that is being passed on - play the video

6) as a class discuss the different pieces of observational knowledge that the Iñupiaq elders passed on (see below for these pieces of knowledge) – explain that this elder knowledge is information that has been gained over thousands of years of successfully living in a harsh environment

7) ask students, are there ways to use the experimental method to test some of this observational knowledge?, allow for discussion - explain that students will break into groups, each group will design a controlled experiment in which they use the scientific method to test a piece of the observational knowledge, remind students that this does not mean that the elder knowledge is incorrect, we are just practicing the principles of the scientific method – possible experiments include but are not limited to:
- testing whether the ice erodes faster during spring (during the whale hunts in the video) because of increasing current or because of another reason (i.e. increased sun during that season)
- testing when (in what season or month) the current becomes strongest in one area of the sea
- are whales affected by the sound of snowmachines (this is not determined by the elders in the video but one elder does discuss how much louder snowmachines are than the previously used dog sleds)

8) students must use their piece of paper (from before) to write down a hypothesis decided on as a group and their controlled experimental design – all students in each group must write it down

9) bring the class back together, ask students to reiterate the major points of experimental knowledge (looking at correlation and causation, testing hypotheses in a controlled experimental manor) vs. observational knowledge (knowledge gained from long term observation not controlled experiments, often accurately predict what will occur in the environment but may not identify the cause, people and some science use this) – collect the pieces of paper

Assessment:
Monitor student understanding and ensure student respect when discussing experimental knowledge vs. observational knowledge. Also monitor student understanding during the review question on experimental vs. observational knowledge. Collect the paper on which they took notes from the video and on which they wrote their group experiments.

Extension Activities:
- Ask a local elder to come and speak to the class.
Elder Knowledge Passed On:
In order of appearance in the video

1) picking the correct spot for whaling
2) how to talk about the whale
3) how the location of the ice has changed over time
4) when to whale (springtime)
5) increased current can erode sea ice during whaling
6) where to find the safest sea ice (1st pressure ridge from the shore)
7) what pressure ridges are
8) pressure ridges can be dangerous