UNIT 2

A–1: Science as Inquiry Process
Culturally Responsive & Place-Based
Introduction of Science Vocabulary

COMPETITION

Place-Based Perspective

Put a small prize item on a table at the front of the room. Ask for two volunteers to come to the front and participate in a “rock, paper, scissors” competition. The winner gets the prize. Explain that though it would have been nice to give the prize to both people, it was a limited resource. Tell the students that plants and animals are often in competition for limited resources.

Heritage Cultural Perspective

Competition for resources has occurred throughout human history. Control of a rich resource could mean survival, wealth, and prosperity. The Stikine Tribe, for example, once controlled the biologically rich Stikine River and all trade along the river to the interior Tahltan peoples. Competition for the resource quickly ensued following the arrival of Europeans and their descendants in Alaska.

PEER-REVIEW

Place-Based Perspective

Show the students a science textbook. Explain to them that the content of the textbook has been reviewed by other scientists to make sure that the information is true and presented in an orderly fashion. Tell them that as a teacher of science, you too are a peer of the authors, and that you constantly review their work to make sure it is appropriate for students. Explain that the peer-review process is very important in science and other disciplines.

Heritage Cultural Perspective

Similar to western science, Traditional Ecological Knowledge (TEK) also seeks to validate hypotheses, processes, and facts in a peer-review process. Questions of cultural importance in Southeast Alaska, for example, are often brought before the Council of Traditional Scholars, a panel of clan leaders and Elders with extensive knowledge of Southeast Native languages and cultures.

HABITAT

Place-Based Perspective

Draw a large island with a palm tree on the board. Ask volunteers to come up to the board and draw animals that might live in this area. Explain that because it’s an island, it’s probably a marine area and because there is a palm tree, it’s probably warm and tropical. Tell the students that this island provides “habitat” for the animals. If they are able to live there, the habitat is providing food, water, and shelter.

Heritage Cultural Perspective

Humans, like other animals, require habitat that meets their basic needs for survival. The indigenous peoples of Southeast Alaska lived (and continue to live) in a bountiful habitat that is rich in natural resources. From the abundant harvests of the ocean to the flora and fauna of the rainforest, food items are plentiful. There was certainly an abundant supply of fresh water too!
Culturally Responsive & Place-Based Introduction of Science Vocabulary

RESOURCES

Place-Based Perspective

Show the students a bunch of wooden pencils. Next, show them a windowsill or other wooden structure in the room. Finally show them books and paper. Explain that wood is a natural resource that humans use in their everyday lives. Tell them that there are many resources that we utilize and depend on.

Heritage Cultural Perspective

The resources provided by the bountiful land of Southeast Alaska have provided for mankind since time immemorial. The indigenous peoples that inhabited this land long ago depended on all aspects of their surroundings and incorporated these into their cultural and spiritual lives. Today, the forests and oceans of the region continue to benefit the Tlingit, Haida and Tsimshian peoples.

TOURISM

Place-Based Perspective

Show the students the picture of a cruise ship in Ketchikan on page 119. Ask the students who might be on the ship and why. Why would they want to come to Alaska? Explain that tourism is a major industry in Alaska and that many people dream of coming here. Ask the students where they dream of visiting.

Heritage Cultural Perspective

Like most people, the indigenous peoples of Southeast Alaska probably had an interest in exploring places from time to time for the sole purpose of enjoyment rather than pure utility. Today tourism is a major aspect of the region’s economy and travelers from distant lands enjoy learning about Native culture and purchasing Native art.

OIL

Place-Based Perspective

Put a drop of vegetable oil on a piece of paper and allow the students to smear it with their fingers. Ask them how it feels. Explain that most oils are slippery and can be used to lubricate moving parts like engines. They are also high in energy. Tell them that oil taken from the ground is used for many different purposes, including the production of gasoline and plastics.

Heritage Cultural Perspective

Oil comes from many sources and has a variety of uses. The Tlingit for example, used Hooligan (Eulachon) oil not only as a food, but also to light their homes in oil lamps and in candles. Seal oil was also used for this purpose. Alaska’s petroleum reserves benefit the indigenous peoples of Alaska today through various components of the Alaska Native Claims Settlement Act (ANCSA).
The mining of copper and iron was important for the Tlingit of long ago. Copper was highly valued and used to produce jewelry, arrows, and other objects. The copper was procured through trade with Athabascans and originated mainly along the Copper River and White River to the north of Tlingit territory. It was typically found as nuggets near the headwaters of these water bodies.

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Alaska Natives have a great interest in the land and resources within their ancestral homelands. Sometimes conflicts related to these interests arise. In the Pebble Mine initiative, for example, some people are interested in extracting resources from the ground and others fear that valuable fisheries will be impacted. One’s interest in a resource often depends on his/her perspective.
LESSONS
Science Language for Success

Introduce the key science vocabulary, using concrete materials and/or pictures.

LISTENING

Use the Mini Pictures activity page from the Student Support Materials. Have the students cut out the pictures. Say the key words and the students show the pictures.

Locomotive

Have the students stand in a straight line in the center of the room. Each student should place his hands on the shoulders of the student in front of him/her. Mount a picture on each of the four walls in the classroom. Tell the students that when they hear one of the four vocabulary words (for the four pictures on the walls), they should step in that direction while still holding onto the shoulders of the players in front of them. Say the four words a number of times; the students should step toward the pictures as they are named.

Funnel Vision

Before the activity begins, collect a large funnel. Have a student stand at the front of the classroom with his/her back to the other students. Give the student the funnel. Give the vocabulary pictures to the other students in the class. The students should hold their pictures up, facing the front of the classroom. Say a vocabulary word. When you say “Go,” the student with the funnel should place the funnel over his/her eyes and turn to face the other students. The student must then look through the funnel to find the picture for the vocabulary word you said. This activity may be conducted with two players (each player having a funnel). The winner of each round is the student who locates the correct picture first. Have the students in the class exchange pictures for each new round of the activity. Repeat.

Student Support Materials

Have the students work on the activity pages from the Student Support Materials from this unit.

SPEAKING

Flip of the Coin

Provide each student with a penny. Keep one penny for yourself. Mount the vocabulary pictures on the board. Have the students (gently) toss their pennies into the air. Each student should look to see which side of his/her penny is face-up. Toss your penny into the air in the same way. Call the side of your penny that is face-up. The students who have the same side of coin face up must then identify (orally) a vocabulary picture you point to. For example, if the heads side of your coin is face up, the students who have heads showing on their coins must then orally identify the vocabulary picture you point to. Repeat this process a number of times.
Science Language for Success

SPEAKING (CONTINUED)

High Roller
Give a die to each of two students. When you say “Go,” the students should roll their dice. The student who rolls the highest number on his/her die must then say a complete sentence about a vocabulary picture that you show. Repeat this process until many students have responded with sentences of their own.

READING

Introduce the science sight words to the students—match the sight words with the vocabulary pictures. The sight words are included in the Student Support Materials, attached to these lesson plans.

Word Length
Before the activity begins, cut a number of sight word cards into different lengths (e.g., 5 in., 15 cm., etc.). Place the sight word cards on the floor at one end of the classroom. Group the students into two teams at the other end of the classroom. Place two rulers on the floor beside the sight words. Say a different measurement to the first player in each team. When you say “Go,” the first player in each team must rush to the sight word cards. Each player must then use the ruler to locate a sight word card that is the same length as the measurement you said. When a player has done this successfully, he/she should read the sight word on that card. Repeat until all players in each team have participated.

What’s Your Sequence?
Provide each student with four blank flashcards. Write four sight words on the board. Each student should write the same sight words on each of his cards (one word per card). When the students’ cards are ready, have them arrange their sight word cards in a specific sequence on their desks (each student should determine his/her own sequence of words). Then, say a sequence of the four words. Any student or students who have their sight words in the same sequence as you said win the round. The winner or winners of this activity are those students who collect the greatest number of wins. The students may change the sequence of their sight word cards after each round of the activity.

Letter Encode
Give each student his/her envelope that contains the alphabet letters. Mount one of the science pictures on the board. The students must use the cut out letters to spell the word for the picture. Review the students’ work. Repeat, until all of the words have been spelled in this way.
WRITING

Back Writing
Group the students into two teams. Have the first player from each team stand in front of the board. Use the index finger of your writing hand to “write” the first letter of a sight word on the two players’ backs. When you have done this, say “Go.” Each of the players should then write a sight word on the board that begins with that letter. Repeat with other pairs of players until all players in each team have played and until all sight words have been written a number of times.

Word Completion
Before the activity begins, prepare clozure cards for the sight words; omit letters and syllables. Provide each student with a clozure card. Call upon the students to complete their words on the clozure cards by writing in the missing parts. Afterward, review the students’ responses.

Student Support Materials
Have the students work on the activity pages from the Student Support Materials for this unit.
VOCABULARY
PICTURES
COMPETITION
PEER-REVIEW
HABITAT
RESOURCES
TOURISM
OIL
MINING
HUNTING
STUDENT SUPPORT MATERIALS

Listening • Mini Pictures
Listening: Mini Pictures

Prepare a copy of these pages for each student. The students should cut out the pictures and lay them on the floor or desk. Say the key words and the students should show you the pictures. Repeat a number of times. This activity can also be done with pairs of students to determine who is the fastest player.
STUDENT SUPPORT MATERIALS

Listening Comprehension
Listening Comprehension

Read the following sentences to the students. The students should circle “true” or “false” for each of the sentences. Review the students’ work.

1. Animals sometimes compete for the same resources. True False

2. Peer-review is review by one’s parents. True False

3. Water is not part of a turtle’s habitat. True False

4. Southeast Alaska has many valuable natural resources. True False

5. Cruise ships bring tourism to Southeast Alaska. True False

6. It is good to have a glass of oil with breakfast. True False

7. Mining is sometimes undertaken to get gold from the ground. True False

8. Hunting was never very popular with Alaska Native people. True False

9. Native peoples have interests in both fishing and hunting on the land. True False
Listening Comprehension: Answer Key

Read the following sentences to the students. The students should circle “true” or “false” for each of the sentences. Review the students’ work.

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STUDENT SUPPORT MATERIALS

Sight Words
mining

hunting

interests
STUDENT SUPPORT MATERIALS

Basic Reading  •  Sight Recognition
Have the students complete the crossword puzzle below.

Across
2. area that provides an organism with food, water, and shelter
4. evaluation of scientific work by others working in the same field
6. a liquid derived from petroleum and used as a fuel or lubricant
7. vacations and visits to places of interest
8. extraction of minerals and other materials from the earth

Down
1. interaction or conflict to secure a limited resource
2. practice of pursuing wildlife for food, recreation or trade
3. a stake, share, or involvement in an undertaking
5. aspects of the environment that species depend on for survival
Have the students cut out the key words and glue them at the bottom of their pictures.
Sight Words Activity Page

Have the students print the key words from this unit horizontally in the boxes (each word may be written more than once). They should then fill in all other boxes with any letters. Have the students exchange pages. The students should then circle the words on the page.
STUDENT SUPPORT MATERIALS

Basic Reading • Encoding
Have the students cut out and encode the syllables of the words, OR number the syllables in their correct sequence.

- com
- ti
- pe
- tion

- peer
- view
- re

- tat
- hab
- i
Encoding Activity Page

Have the students cut out and encode the syllables of the words, OR number the syllables in their correct sequence.

- ces sour re

- ism tour

- oil
Encoding Activity Page

Have the students cut out and encode the syllables of the words, OR number the syllables in their correct sequence.

esting

min

ing

hunting

ests

in
ter
Encoding Activity Page

Have the students cut out the word halves and glue them together to create the key words for this unit.

compe

view

to

define

peer-re

urism

ting

res

nting

l

ereests
Encoding Activity Page

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oi  tition

min  ources

hu  itat

int  ing
STUDENT SUPPORT MATERIALS

Reading Comprehension
Reading Comprehension Activity Page

Have the students read the text and then select the correct answer for it. They should fill in the appropriate bullet beside the answer of their choice.

1. Competition between two male adult moose may be caused by:
   - a nearby person yelling “fight!”
   - both moose wanting the same female
   - rainy weather
   - moose do not ever fight

2. Peer-review is completed by:
   - others working in the same field
   - parents of the author
   - government committees
   - marine biologists only

3. Salmon habitat includes all of these EXCEPT:
   - ocean
   - rivers
   - deserts
   - streams

4. A resource can be defined as:
   - an animal that is walking strangely
   - a source of a stream or other waterway
   - a body of knowledge
   - any aspect of the environment that species depend on

5. Tourism may include which of the following:
   - cruise ships
   - dog mushing
   - halibut charters
   - all of the above
Oil is a resource that:
- can be found in Alaska
- is valuable to humans
- is necessary for automobiles
- all of the above

Which of the following can be gotten through mining?
- gold
- oranges
- lizards
- rock bands

Hunting is an activity that:
- wakes you up at night
- provides food for people and their families
- causes your computer to crash
- is used to harvest corn

Which of the following are natural resource interests in Alaska?
- trees
- oil
- gold
- all of the above
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Which of the following are natural resource interests in Alaska?
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- oil
- gold
- all of the above
Have the students write the letters for sentence halves that match.

1. Competition for the female
2. Scientific journal articles typically
3. Salmon habitat is critical
4. Alaska has a number of natural resources
5. Cruise ships are part of
6. Cars would not be able to
7. Gold, copper and coal are gotten through
8. Moose, deer and mountain goats
9. Different groups of people may have

A. including oil, gas, and timber
B. the tourism industry in Alaska
C. are sometimes gotten through hunting.
D. run without oil.
E. different interests in a resource.
F. for their survival.
G. resulted in the moose locking horns.
H. undergo peer-review
I. mining.

1→___________  2→___________  3→___________  4→___________
5→___________  6→___________  7→___________  8→___________
9→___________
Reading Comprehension Activity Page

ANSWER KEY

1. Competition for the female
2. Scientific journal articles typically undergo peer-review
3. Salmon habitat is critical for their survival.
4. Alaska has a number of natural resources including oil, gas, and timber.
5. Cruise ships are part of the tourism industry in Alaska.
6. Cars would not be able to run without oil.
7. Gold, copper and coal are gotten through mining.
8. Moose, deer and mountain goats resulted in the moose locking horns.
9. Different groups of people may have different interests in a resource.

1→G  2→H  3→F  4→A
5→B  6→D  7→I  8→C
9→E
### Reading Comprehension Activity Page

Have the students cut out the words and glue them under their definitions.

<table>
<thead>
<tr>
<th>Vacations and visits to places of interest</th>
<th>Interaction or conflict to secure a limited resource for survival</th>
<th>A stake, share or involvement in an undertaking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspects of the environment that species depend on for survival</td>
<td>Practice of pursuing wildlife for food, recreation or trade</td>
<td>Evaluation by others in the same field</td>
</tr>
<tr>
<td>Area that provides an organism with food, water, and shelter</td>
<td>Extraction of minerals and other materials from the earth</td>
<td>A liquid derived from petroleum and used as a fuel or lubricant</td>
</tr>
</tbody>
</table>

- competition
- peer-review
- habitat
- resources
- tourism
- oil
- mining
- hunting
- interests
### Reading Comprehension Activity Page

#### ANSWER KEY

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<tr>
<td>resources</td>
<td>hunting</td>
<td>peer-review</td>
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<td>habitat</td>
<td>mining</td>
<td>oil</td>
</tr>
</tbody>
</table>
STUDENT SUPPORT MATERIALS

Basic Writing
Basic Writing Activity Page

Have the students write in the missing letters.

com_______ion
peer-r_______w
ha_______at
r_______ces
to_______sm
o_______l
m_______ing
h_______ing
in_______ts
Basic Writing Activity Page

Have the students write the word for each picture.
Basic Writing Activity Page

ANSWER KEY

interests  oil  hunting

tourism  peer-review  habitat

mining  resources  competition
STUDENT SUPPORT MATERIALS

Creative Writing
Have the students write sentences of their own, using the key words from this unit. When the students’ sentences are finished, have them take turns reading their sentences orally. The students should say “Blank” for the key words; the other students must name the “missing” words. You may wish to have the students write the “definitions” for the key words.

COMPETITION

PEER-REVIEW

HABITAT

RESOURCES

TOURISM

OIL

MINING

HUNTING

INTERESTS
Creative Writing Activity Page

Have the students write sentences of their own, based on the picture below. When finished, have each student read his/her sentences to the others.

__________________________________________________________________
__________________________________________________________________
__________________________________________________________________
__________________________________________________________________
__________________________________________________________________
__________________________________________________________________
UNIT ASSESSMENT

A–1: Science as Inquiry Process
SCIENCE PROGRAM

Unit Assessment Teacher’s Notes
Grade 8  •  Unit 2 (A–1)
Theme: Science as Inquiry Process

Date:________________
Unit Assessment

Provide each student with a copy of the students’ pages. Read the following instructions aloud. The students should answer the questions on their copies of the assessment.

BASIC LISTENING

Turn to page 1 in your test. Look at the pictures in the boxes.

1. Write the number 1 by the picture for COMPETITION.
2. Write the number 2 by the picture for PEER-REVIEW.
3. Write the number 3 by the picture for HABITAT.
4. Write the number 4 by the picture for RESOURCES.
5. Write the number 5 by the picture for TOURISM.
6. Write the number 6 by the picture for OIL.
7. Write the number 7 by the picture for MINING.
8. Write the number 8 by the picture for HUNTING.
9. Write the number 9 by the picture for INTERESTS.

LISTENING COMPREHENSION

Turn to page 2 in your test. Listen to the sentences I say. Circle “T” for true and “F” for false sentences.

1. Competition often exists between organisms with the same needs.
2. Scientific journal articles are typically peer-reviewed.
3. Rivers and streams are part of salmon habitat.
4. Humans have no interest in natural resources.
5. Tourism is not at all important to the state of Alaska.
6. Oil is a solid substance used for making cheese.
7. Mining is one method for getting gold from the ground.
8. Hunting provides little or no food for people and their families in Alaska.
9. People have a number of interests in Alaska’s resources.
Unit Assessment

Provide each student with a copy of the students’ pages. Read the following instructions aloud. The students should answer the questions on their copies of the assessment.

SIGHT RECOGNITION
Turn to pages 3 and 4 in your test. Look at the pictures in the boxes. Circle the word for each picture.

DECODING/ENCODING
Turn to page 5 in your test. Look at the word parts in the boxes. Circle the other half or part of each word.

READING COMPREHENSION
Turn to page 6 in your test. Read the sentence part and fill in the bullet for the correct sentence ending.

BASIC WRITING
Turn to page 7 in your test. Look at the pictures in the boxes. Write the word for each picture.

CREATIVE WRITING
Turn to page 8 in your test. Write a sentence of your own, using each word.
Teacher: To get a percentage for this student’s assessment, divide the total number of questions correct by the total number of questions, then multiply this answer by 100 to determine the percentage of questions answered correctly.
SCIENCE PROGRAM

Unit Assessment Student Pages
Grade 8  •  Unit 2 (A–1)
Theme: Science as Inquiry Process

Date:_____________  Student’s Name:____________________

Number Correct:__________  Percent Correct:__________
<p>| | | |</p>
<table>
<thead>
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<td>1.</td>
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competition peer-review habitat resources tourism oil mining hunting interests

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Animals trying to get the same resource are in ______________ with one another.
- harmony
- competition
- trouble

Peer-review is done by:
- others working in the same field
- parents
- organisms other than people

The habitat of a salmon includes:
- rivers and streams
- tropical rainforests
- deserts

Which one of the following is not a resource of Southeast Alaska?
- timber
- salmon
- grapes

Tourism includes people:
- visiting places of interest
- researching at the library
- fighting a war

Oil is usually:
- a liquid
- a solid
- a gas

Mining is a way to get which of the following from the earth?
- Salmon
- Timber
- Gold

The term used for the activity of taking wild game for humans to eat is:
- hunting
- exploring
- pioneering

Which of the following is not an “interest” within Alaska?
- Timber
- Gold
- Salmon
- Oranges
SCIENCE PROGRAM

Unit Assessment ANSWER KEY
Grade 8 • Unit 2 (A–1)
Theme: Science as Inquiry Process
1. T  F
2. T  F
3. T  F
4. T  F
5. T  F
6. T  F
7. T  F
8. T  F
9. T  F
competition
peer-review
habitat
resources
tourism
oil
mining
**hunting**
interests
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resources | interests | mining
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