

Overview

In this lesson, students will play a BINGO game involving items from their daily life that are made from various natural resources.

Objectives

On successful completion of this lesson, students will be able to:

- identify items made from natural resources;
- identify renewable, nonrenewable, and reusable resources; and
- describe how the local community uses renewable, nonrenewable, and reusable natural resources.

Alaska Standards

Alaska Science Standards / Grade Level Expectations

- [3] SA1.1 The student demonstrates an understanding of the processes of science by asking questions, predicting, observing, describing, measuring, classifying, making generalizations, inferring, and communicating.
- [3] SA1.2 The student demonstrates an understanding of the processes of science by observing and describing the student's own world to answer simple questions.
- [3] SC3.1 The student demonstrates an understanding that all organisms are linked to each other and their physical environments through the transfer and transformation of matter and energy by identifying examples of living and non-living things in the local environment.
- [3] SE1.1 The student demonstrates an understanding of how to integrate scientific knowledge and technology to address problems by identifying local problems and discussing solutions.

Alaska English / Language Arts Standards

W.3.2.a-d Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

Alaska Cultural Standards

[A] Culturally knowledgeable students are well grounded in the cultural heritage and traditions of their community.





[E] Culturally knowledgeable students demonstrate an awareness and appreciation of the relationships and processes of interaction of all elements in the world around them.

- [E.1] Students who meet this cultural standard are able to recognize and build upon the interrelationships that exist among the spiritual, natural, and human realms in the world around them, as reflected in their own cultural traditions and beliefs as well as those of others.
- [E.2] Students who meet this cultural standard are able to understand the ecology and geography of the bioregion they inhabit.

Bering Strait School District Scope & Sequence

2nd grade sequence #9: Natural Resources

- A. Understand what a natural resource is.
- B. Understand what can be observed about rock and soil.
- C. Understands how we can protect natural resources.
- D. Uses scientific processes and inquiry to directly support the concepts of the natural resources.

3rd grade sequence #10: Conserving Natural Resources

- A. Understand what a natural resource is.
- B. Understands some types of soil.
- C. Understands how people use and impact the environment.
- D. Understands how resources can be used wisely.
- E. Use scientific processes to directly support concepts on conserving natural resources.

Materials

- Natural Resources Bingo Cards (one card for each student)
- Natural Resources Bingo Cue Sheet
- Beans (for marking the Bingo Cards approximately 25 per student)
- Chart Paper
- Markers
- The Earth's Resources: Renewable and Non-Renewable (Earth's Processes) by Rebecca Harman

Optional:

Student Worksheet: How Families Use Natural Resources





Optional for the introduction activity:

- newspaper
- aluminum cans
- a glass
- a plastic jug
- a cup of oatmeal
- an egg
- beef jerky

Multimedia

REACH Multimedia K-3: "Needs and Wants"
Available at: www.k12reach.org

Additional Resources

Jump into Science: Dirt by Steve Tomecek

Dirt: The Scoop on Soil (Amazing Science) by Natalie M. Rosinsky

Natural Resources - Energy: Powering the Past, Present, and Future by Julie K. Casper, Ph.D.

Minerals: Gifts from the Earth (Natural Resources) by Julie Kerr Casper, Ph.D.

Sun Power: A Book about Renewable Energy (Earth Matters) by Esther Porter

Using Coal, Oil, and Gas (Exploring Earth's Resources) by Sharon Katz Cooper

Using Rocks (Read and Learn: Exploring Earth's Resources) by Sharon Katz Cooper

Using Soil (Read and Learn: Exploring Earth's Resources) by Sharon Katz Cooper

Using Plants (Read and Learn: Exploring Earth's Resources) by Sharon Katz Cooper

Using Water (Read and Learn: Exploring Earth's Resources) by Sharon Katz Cooper

Using Air (Read and Learn: Exploring Earth's Resources) by Sharon Katz Cooper

Activity Preparations

- 1. Read through the entire lesson, including the teacher background information in the Whole Picture section.
- 2. If needed, make replacement copies of the Bingo Cards and Bingo Cue Cards from the template in the Appendix.
- 3. For the introduction activity, gather pictures or collect actual objects for the following examples: newspaper, aluminum cans, a glass, a plastic jug, beef jerky, a cup of oatmeal, and an egg.





4. If desired, make copies of the Student Worksheet: How Families Use Natural Resources.

Whole Picture

Natural resources are all those things that come directly from the environment and are used to make the things that people need for food, shelter, and energy. Natural resources include things like plants, soil, sunshine, water, fossil fuels, wildlife, metals, and minerals. Alaska has an abundance of natural resources: forests in the south, fossil fuels and minerals in the north, and wildlife and fish in both the interior and in the seas.

Every day, people depend on natural resources. Where natural resources are exported, they are an important part of the cash economy. When turned into fuel — whether from fossil, wind, or solar sources — they power homes and vehicles. When processed, they provide the materials to build our homes, clothe our bodies, and allow us to communicate with each other at long distances. Natural resources also provide us with the food and minerals to nourish our bodies.

In northern Alaska, some important natural resources are exported as part of the cash economy. Oil and natural gas are extracted from the ground and exported to locations where they are refined into fuel that is then shipped back to the villages. This fuel powers snow-machines, four-wheelers, and boats, and also heats our homes. It is also shipped outside the state, where people use it to power their vehicles. Likewise, fish and seafoods are important natural resources for the cash economy. The Bering Sea is home to abundant fisheries, including king crab, salmon, and pollock. The products from these lucrative fisheries are exported around the world.

Perhaps the most important use of Alaska's natural resources is as subsistence food. Most people who live in rural villages depend largely on the plants and animals harvested from the land. (Though some "western" food is available at village stores, much of it is expensive.) In addition, the rituals and ceremonies people practice during and surrounding subsistence activities are culturally important. In this way, natural resources are fundamental not only for nutrition, but also for spiritual value (Barnhardt and Kawagley, 2005).

The Iñupiat, Yupiit, and Siberian Yupik people of northwestern Alaska have practiced subsistence activities for millennia. As semi-nomadic people, they historically built their seasonal homes as a part of the landscape, using only the materials immediately available to them (Kawagley, 2006). Dependence on natural resources for survival can also be seen in archaeological material culture like toggle-head harpoons, bolas, and



collecting baskets (UAMN, 2015). In addition, a spiritual connection can be seen in traditional masks, which depict the reproductive cycling of plant and animal spirits — both important natural resources for survival. Even today, guidance from the elders teaches us that the natural resources we depend on must be treated carefully and with respect, so as to ensure their availability in the future (ANKN, 2006).

As the climate begins to change, wisdom from the elders will be ever more important as people adapt their uses of natural resources to changing landscapes and scarcity of raw materials. Learn from elders and culture bearers in your community how people can continue to use and protect local natural resources.

Vocabulary

natural resource – anything from the environment that can be used

fossil fuel – a resource that comes from the remains of living things that lived long ago
minerals – a solid object found in nature that has never been alive
renewable resource – a resource that can be replaced in a human lifetime
reusable resource – a resource that can be used again and again
nonrenewable resource – a resource that when it is used up, will not exist again in a
human lifetime

Activity Procedure

- 1. Display examples of the newspaper, aluminum can, glass, plastic jug, cup of oatmeal, beef jerky, and an egg in front of the class. Invite the class to look at the items. Explain that all the items come from natural resources. Ask the students to guess which item was made from which natural resource.
- 2. Introduce the vocabulary terms renewable, reusable, and nonrenewable. Explain to the class that humans depend on natural resources to make the things we need. Ask the students to name some things they discard or throw into the trash. Record these on the board or a piece of chart paper. Have them look at the list and think about which natural resource they think each item came from. Ask if anyone has any ideas and record their responses on the board.
- 3. Ask (pre-assessment):
 - Which items were easy to determine what the natural resource was?
 - Why was it difficult to decide what the natural resource was for some items?
 - Which items were made from renewable resources?



- Which items were made from nonrenewable resources?
- Which items were made from reusable resources?
- How else can we use our natural resources?
- 4. Tell the students they are going to play a game called Natural Resources Bingo to help them learn what types of activities, objects, and materials comes from different resources. Show them a bingo card and explain that the natural resources are divided into five categories:
 - B is plants
 - Lis animals
 - N is a combination of air, water, and sun
 - G is fossil fuels
 - O is minerals
- 5. Explain the following procedure to the students:
 - The class will be divided into groups of four.
 - Each student will have their own bingo card, but anyone in the group may help another group member if needed.
 - Each bingo card has everyday activities, objects, materials, and natural resources listed in each column.
 - Each student will get a handful of beans to cover their card.
 - The teacher will randomly call out the Bingo Cues, such as wolf ruff.
 - Any student with a picture of a wolf ruff under the I column, or animals column, would place a bean marker on that space.
 - The game will continue in this manner until a student calls out, "Bingo."
 - To get to Bingo, a student must have five in a row, being either across, down, or diagonally. If students prefer, they can also play "blackout" where they cover the entire card after they have played five in a row Bingo a couple of times.
 - Students may mark only one space on their card at a time after the teacher calls out an item.
 - Even though some items have more than one natural resource it is made from, the focus will be on the main natural resource that makes up each item. For example, a pencil might be graphite and wood, but for the games purposes, we would focus on the mineral graphite, so the pencil would be under O or mineral because graphite is a mineral.
 - When someone yells, "Bingo," that person will need to read off the "Bingo" on their card stating the letter, then the natural resource, then the item in

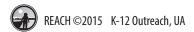


the column. The student will explain why that item belongs in the column it is in. Example: B is for plants with the item being a dog sled. A dog sled can be made of wood from trees that are plants. The student will do this with all of the items on his or her card that were covered in order to earn Bingo.

- The other group members may help the student if needed.
- 6. The game may be played several rounds, as time allows.
- 7. Discussion questions (student assessment):
 - Looking at your cards, what things are made and/or used from plants?
 - Looking at your cards, what things are made and/or used from animals?
 - Looking at your cards, what things are made and/or used from water, air, or the sun?
 - Looking at your cards, what things are made and/or used from fossil fuels?
 - Looking at your cards, what things are made and/or used from minerals?
 - Which resources do you think are used the most? Why?
 - Which are the renewable resources?
 - Which are the reusable resources?
 - Which resources are the nonrenewable resources and are limited in supply?
 - Why would it be important to conserve or protect natural resources?
 - What do you think would happen to the earth if you used more resources than the earth could make?
 - What do you think would happen if a community used all the resources that were in their local environment?
- 8. Wrap up the lesson by reading aloud The Earth's Resources: Renewable and Non-Renewable and/or Sun Power: A Book about Renewable Energy.
- 9. Optional: Give each student the Student Worksheet: How Families Use Natural Resources to complete. Have them complete it at home if they do not finish in class. Worksheets should be returned to class the next day to share and discuss with the class.

Extension Activities

 Make a Natural Resource bulletin board, identifying the natural resources and allowing room for students to pin on pictures or words of products that are made from natural resources or activities that can be done with natural resources.

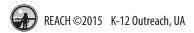




- Have a Natural Resource Show and Tell Time. Students bring or name a favorite thing or two, then explain the natural resources that went into making the thing(s).
- Sort the classroom trash and determine which natural resources were used to make the items being thrown away. Discuss the need for conservation.
- Brainstorm a list of suggestions for conserving natural resources in the local community.

Answers

- 7. Discussion questions (student assessment):
 - Things that are made and/or used from plants: grass baskets, cotton t-shirts, blueberries, lumber, Labrador tea, rose hips, currants, birch, paper, herbal medicines, spruce tree, willow, dog sled.
 - Things that are made and/or used from animals: pollock, snowshoe hare, fur mittens, blubber, seal oil, ptarmigan, walrus tusks, Canada Goose, salmon, king crab, wolf ruff, caribou, dogsled team, skin boats, drum head.
 - Things that are made and/or used from water, air, or the sun: warmth, skiing, swimming, sailing, solar energy, water, sunshine, ice, wind.
 - Things that are made and/or used from fossil fuels: athletic shoes, plastic bag, paints, toy, oil, gasoline, coal, insulation, medicines, basketball.
 - Things that are made and/or used from minerals: roofing, glass, salt, diamond rings, soil, silver necklace, four wheeler, snow machine, pencil, sheetrock, toothpaste, nail.
 - Resources used most: Answers will vary as students' opinions vary.
 Students' answers should be reasonable and supportive of prior question.
 - Renewable resources: animals, plants
 - Reusable resources: air, water, sun
 - Nonrenewable resources and are limited in supply: minerals, fossil fuels
 - Important to conserve or protect natural resources: To ensure that there are enough resources available in years to come and that the renewable resources are able to continue their cycles of reproduction
 - Using more resources than the earth could make: A shortage of resources
 would occur and humans would not be able to make the products that
 they desire. If it continues, it could lead to exhaustion of nonrenewable
 resources, depletion of the renewable resources, and the fouling of the
 reusable resources.





• If a community used all the resources that were in their local environment: if all the resources were used in the local environment, humans would be unable to live because the things they need would not be available.

References

Alaska Native Knowledge Network (ANKN). (2006). "Alaska Native Values for Curriculum". Accessed from: http://ankn.uaf.edu/ancr/Values/index.html

Barnhardt, Ray, and Kawagley, Angayuqaq Oscar. (2005). "Indigenous Knowledge Systems and Alaska Native Ways of Knowing". Anthropology & Education Quarterly, 36(1): 8-23.

Student Worksheet:	How Families Use Natural Resources
Name	

How Families Use Natural Resources				
Activi	ties		Products	
fly kites	swim	balloons	soft drinks	fur mittens
fish	dig for roots	basketballs	glass	plastic toys
ski	climb trees	water bucket	bread	fuel oil
grow a garden	play in the sun	gasoline	peanut butter	backpack
watch TV	watch birds	apples	clothes	winter coats
heat our homes	use a computer	strawberries	smoked salmon	pop cans
ride in a plane	mush dogs	paper	milk	four wheeler
grow plants	sunbathe	furniture	seal oil	school desk
hunt	climb on rocks	cheese	pencil	
sail		fish hooks	insulation	
play on the grass		tires	shoes	

Everything is made from natural resources. The chart above gives examples of the activities and products of many of the things we do or have in our community. Answer the following questions about how the community uses natural resources by choosing words from the above chart.

1. Name two products made from each natural resource:

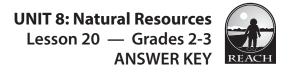
Water: soft drinks, ice

Plants: apples, strawberries, winter coats, furniture, bread, peanut butter, clothes

Animals: smoked salmon, milk, seal oil, shoes, fur mittens, winter coats, cheese

Minerals: water bucket, furniture, glass, pop cans, four wheeler, school desk, fish hooks

Fossil fuels: balloons, basketballs, gasoline, tires, insulation, shoes, plastic toys, backpack



2. Name one activity that depends on each natural resources.

Air: fly kites, sail, ride in a plane

Sun: *grow plants, suntanning, play in the sun*

Water: fish, sail, swim, ski

Plants: grow a garden, climb trees, dig for roots

Animals: hunt, fish, mush dogs, watch birds

Minerals: <u>climb on rocks, dig for roots, grow plants</u>

Fossil Fuels: <u>heat our homes, ride in a plane, use a computer</u>

3. Explain the difference between renewable and non-renewable resources. Give an example of each.

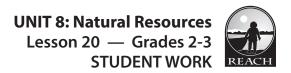
Renewable resources can be restored and the supply is limitless as long as we don't abuse it. Plants and animals are renewable resources. Nonrenewable resources are things that are in limited supply and cannot be replaced. Nonrenewable resources include fossil fuels and minerals.

4. Explain the difference between renewable and reusable resources. Give an example of each.

Renewable resources can be restored and the supply is limitless as long as we don't abuse it Plants and animals are renewable resources. Reusable resources are things like the water, air, and the sun. They can be used over and over again.

5. Describe how the local community uses renewable, nonrenewable, and reusable natural resources. Give examples of the resources used.

<u>Answers will vary depending upon the natural resources the student discusses and the products or activities he or she gives as examples.</u>



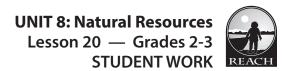
Student Worksheet:	How Families Use Natural Resources
Name	

How Families Use Natural Resources				
Activi	ties		Products	
fly kites	swim	balloons	soft drinks	fur mittens
fish	dig for roots	basketballs	glass	plastic toys
ski	climb trees	water bucket	bread	fuel oil
grow a garden	play in the sun	gasoline	peanut butter	backpack
watch TV	watch birds	apples	clothes	winter coats
heat our homes	use a computer	strawberries	smoked salmon	pop cans
ride in a plane	mush dogs	paper	milk	four wheeler
grow plants	sunbathe	furniture	seal oil	school desk
hunt	climb on rocks	cheese	pencil	
sail		fish hooks	insulation	
play on the grass		tires	shoes	

Everything is made from natural resources. The chart above gives examples of the activities and products we do or have in our community. Answer the following questions about how the community uses natural resources by choosing words from the above chart.

Water:	
Plants:	
Animals:	
Minerals:	
Minerals:	
Fossil Fuels:	
Fossil Fuels:	

1. Name two products made from each natural resource:



2. Name one activity that depends on each natural resource.

Air:	Sun:
Water:	Plants:
Animals:	Minerals:
Fossil Fuels:	
3. Explain the difference between example of each.	een renewable and nonrenewable resources. Give an
4. Explain the difference between example of each.	een renewable and reusable resources. Give an
5. Describe how the local com natural resources.	munity uses renewable, nonrenewable, and reusable



В	I	N	G	0
Plants	Animals	Water, Air, Sun	Fossil Fuels	Minerals
grass basket	pollock	warmth	athletic shoes	roofing
cotton t-shirt	snowshoe hare	skiing	gasoline	glass
blueberries	fur	*free space	paints	salt
lumber	blubber	swimming	toys	diamond
Labrador tea	seal	sailing	oil oil	soil

В	I	N	G	0
Plants	Animals	Water, Air, Sun	Fossil Fuels	Minerals
rose hips	ptarmigan	solar energy	gasoline	silver
currants	walrus tusks	water	coal	four-wheelers
birch	Canada goose	*free space	insulation	snow machines
paper	salmon	sunshine	\mathcal{R}_{χ} medicine	pencils
herbal	king crab	wind	basketball	toothpaste



В	I	N	G	0
Plants	Animals	Water, Air, Sun	Fossil Fuels	Minerals
spruce tree	wolf	ice	basketball	nail
willow	caribou	warmth	\mathcal{R}_{χ} medicine	roofing
dog sled	dogsled	*free space	insulation	glass
grass baskets	skin boats	swimming	coal	salt
cotton t-shirt	pollock	sailing	gasoline	diamond

В	I	N	G	0
Plants	Animals	Water, Air, Sun	Fossil Fuels	Minerals
blueberries	snowshoe hare	skiing	OIL oil	soil
lumber	Canada	solar	toys	silver
Labrador tea	fur	*free space	paints	four-wheeler
rose hips	blubber	wind	plastic bag	snow machine
currants	seal oil	sunshine	athletic shoes	pencil



В	I	N	G	0
Plants	Animals	Water, Air, Sun	Fossil Fuels	Minerals
birch	Canada goose	solar	coal	pencils
paper	salmon	sunshine	insulation	toothpaste
herbal medicine	king crab	*free space	\mathcal{R}_{χ} medicine	nail
spruce tree	wolf	ice	basketball	roofing
willow	caribou	wind	athletic shoes	glass

В	I	N	G	0
Plants	Animals	Water, Air, Sun	Fossil Fuels	Minerals
dog sled	dogsled team	ice	plastic	salt
grass basket	skin boat	skiing	paints	diamond ring
cotton t-shirt	drum head	*free space	toy	soil
blueberries	pollock	swimming	oil oil	silver
lumber	snowshoe hare	sailing	gasoline	four wheeler



DITTO CAMES				17101-1
В	I	N	G	0
Plants	Animals	Water, Air, Sun	Fossil Fuels	Minerals
Labrador tea	fur mittens	sunshine	paints	snow machine
rose hips	blubber	ice	toy	pencil
currants	seal oil	*free space	oil oil	toothpaste
birch	ptarmigan	wind	gasoline	nail
paper	walrus tusks	(((((((warmth	coal	roofing

В	I	N	G	0
Plants	Animals	Water, Air, Sun	Fossil Fuels	Minerals
herbal	Canada	skiing	insulation	glass
spruce tree	salmon	swimming	paints	salt
willow	drum head	*free space	\mathcal{R}_{χ} medicines	diamond
dogsled	king crab	sailing	basketball	soil
grass baskets	wolf ruff	solar	athletic shoes	silver



DITTO CATT					INGLS
В		I	N	G	0
Plants		Animals	Water, Air, Sun	Fossil Fuels	Minerals
cott t-sh		caribou	swimming	\mathcal{R}_{χ} medicines	four-wheeler
bluebe	rries	dogsled team	sailing	basketball	snow machine
lumber		skin boat	*free space	athletic shoes	nail
Labra	ador tea	drum head	solar energy	plastic bag	roofing
	rose nips	pollock	water	paints	glass

В	I	N	G	0
Plants	Animals	Water, Air, Sun	Fossil Fuels	Minerals
currants	snowshoe hare	sunshine	toy	salt
birch	fur	ice	OIL oil	diamond
paper	blubber	*free space	gasoline	soil
herbal medicine	seal	wind	coal	silver
spruce tree	ptarmigan	skiing	insulation	pencil



В	I	N	G	0
Plants	Animals	Water, Air, Sun	Fossil Fuels	Minerals
willow	walrus tusk	sailing	plastic	toothpaste
dog sled	Canada	solar	athletic shoes	nail
grass basket	salmon	*free space	paints	roofing
cotton t-shirt	king crab	water	toy	glass
blueberries	wolf ruff	sunshine	oil oil	salt

В	I	N	G	0
Plants	Animals	Water, Air, Sun	Fossil Fuels	Minerals
lumber	caribou	ice	coal	diamond
Labrador tea	dogsled team	wind	insulation	soil
rose hips	skin boat	*free space	\mathcal{R}_{χ} medicine	silver
currants	drum head	solar	plastic bag	four-wheeler
birch	pollock	skiing	paints	snow machine



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В	I	N	G	0
Plants	Animals	Water, Air, Sun	Fossil Fuels	Minerals
paper	snowshoe hare	solar energy	\mathcal{R}_{χ} medicine	snow machine
herbal	fur	water	basketball	nail
spruce tree	caribou	*free space	athletic shoes	roofing
willow	seal	sunshine	paints	soil
dog sled	ptarmigan	ice	toy	salt

В	I	N	G	0
Plants	Animals	Water, Air, Sun	Fossil Fuels	Minerals
grass basket	walrus tusks	wind	OIL oil	diamond
cotton t-shirt	Canada	warmth	gasoline	silver
blueberries	salmon	*free space	coal	pencil
lumber	king crab	skiing	insulation	toothpaste
Labrador tea	wolf ruff	swimming	plastic bag	four-wheeler



В	I	N	G	0
Plants	Animals	Water, Air, Sun	Fossil Fuels	Minerals
rose hips	dogsled team	wind	paints	salt
currants	skin boat	warmth	toy	diamond
birch	drum head	*free space	oil oil	silver
paper	pollock	skiing	coal	pencil
herbal medicine	snowshoe hare	sailing	insulation	toothpaste

В	I	N	G	0
Plants	Animals	Water, Air, Sun	Fossil Fuels	Minerals
spruce tree	fur	swimming	plastic bag	four-wheeler
willow	blubber	solar	\mathcal{R}_{χ} medicine	snow machine
dog	seal	*free space	basketball	roofing
grass basket	ptarmigan	water	athletic shoes	glass
cotton t-shirt	walrus tusks	sunshine	gasoline	nail



BINGO CUE SHEET

В	I	N	G	0
Plants	Animals	Water, Air, Sun	Fossil Fuels	Minerals
grass basket	pollock	warmth	athletic shoes	roofing
cotton t-shirt	snowshoe hare	skiing	plastic bag	glass
blueberries	fur mittens	swimming	paints	salt
lumber	blubber	sailing	toy	diamond ring
Labrador tea	seal oil	solar energy	oil	soil
rose hips	ptarmigan	water	gasoline	silver necklace
currants	walrus tusks	sunshine	coal	four-wheeler
birch	Canada goose	ice	insulation	snow machine
paper	salmon	wind	medicines	pencil
herbal medicine	king crab		basketball	toothpaste
spruce tree	wolf ruff			nail
willow	caribou			
dog sled	dogsled team			
	skin boat			
	drum head			