

Sheep Tales

Purpose: This lesson introduces students to classifying natural, capital and human resources. The Minnesota agricultural commodity of sheep is also highlighted

Time: 1hour

Level: 2

Materials:

- One small box for each group of 3-4 students
- Leaves, pinecones, nuts, sticks, rocks, rice, seeds, or additional “natural” items. Place one of each item in each box.
- Scissors
- Glue
- Wool items – blankets, sweaters, suits, socks, etc.
- Pictures of sheep and lambs - Minnesota Agriculture in the Classroom has a FREE classroom set of commodity cards that would work well

<http://www.mda.state.mn.us/kids/commoditycards.aspx>

- *Sheep Resources Worksheet*
- *Sheep-to-Sweater Information Sheet*
- *Sheep-to-Sweater Graphic Organizer*

OPTIONAL

- *Wool Spinning Kit*
<https://utah.agclassroom.org/cart/?resource>



Minnesota/Common Core Language Arts Standards and Benchmarks

2.2.3.3 Describe the connection between a series of historical events, scientific ideas or concepts or steps in technical procedures in a text.

Minnesota Science Standards and Benchmarks

2.2.1.1.1 Describe objects in terms of color, size, shape, weight, texture, flexibility, strength and the types of materials in an object.

Minnesota Social Studies Standards and Benchmarks

2.2.3.5.1 Classify materials that come from nature as natural resources; tools, equipment and factories as capital resources; and workers as human resources

Background

Productive resources are the natural resources, capital resources and human resources available to make goods and services. Students will participate in an activity to learn the definitions of these types of resources and then use this information to identify the resources used in creating wool fabric.

For thousands of years sheep have been used for meat as well as for their wool resources. The American Sheep Industry calls wool the “perfect fiber because you can shear a sheep spin its wool into yarn for a sweater or a skirt. Before you know it the sheep has grown a new fleece and the cycle starts all over again.”

Sheep have played an important role in human history. They were among the first species to be domesticated and provided both meat for food and wool for clothing. Sheep skin hides were also used for clothing and shelter. The weaving and felting of wool were among the first arts to be developed.

Female sheep are called ewes (said like “you”) and male sheep are rams. The offspring of a ewe and a ram is a lamb. Like cattle, sheep are ruminants which means they have four compartments in their stomachs. Sheep do not have any upper front teeth. When eating forages such as grass and alfalfa, they close the lower teeth against the dental pad of the upper jaw. Ewe lambs and wethers (neutered males) are raised for meat. Lamb is the term for meat from a sheep that is under one year of age. Sheep are an important livestock animal in Minnesota agriculture. In 2010, the gross income from sheep and lambs was \$19,386,000. And the value of wool production for sheep in Minnesota was \$357,000.

Procedure

Activity 1 – Natural Resources

1. Before class create a “resource box” for every 3-4 students. Each box should contain 5-10 raw materials or items from nature (see **Materials** list).
2. Place students into teams of 3-4. Tell each team to get a box, open it, and take out all items. Give students approximately 10 minutes to take turns describing each object in their groups and discuss what all of the items in the box have in common.

Natural Resources –
“Gifts of nature” that are
present without human
intervention

Capital Resources –
Tools, equipment,
factories, etc. that are used
to make goods and
services

Human Resources –
Quantity and quality of
human effort directed
toward producing goods
and services.

3. Call on members of the different groups to describe an item in their box. If students do not provide information on the following features, prompt them to describe:
 - a. Color
 - b. Size
 - c. Shape
 - d. Weight
 - e. Texture
 - f. Flexibility
 - g. Strength
4. Ask for teams to volunteer what they thought all of the items in their box had in common. (*Answers will vary!*) Explain that all of the items are **natural resources**. These items are produced by nature not by humans. The natural resources can be used to produce goods that can make our lives easier and more enjoyable. Ask students what sort of goods some of the natural resources in their box can be used to make. (*Food – from nuts, leaves, seeds; Furniture, paper – stick*).
5. Explain to students that natural resources can sometimes be used in their natural form but many times tools, equipment, processing plants and factories are needed to make natural resources into usable goods. These tools and processes that are used over and over again to produce goods from natural resources are called **capital resources**.

Activity 2 – Capital and Human Resources

1. Tell students that you are going to give them two items to use as capital resources – scissors and glue. The students must work in their team with the items in their box and their two new capital resources to produce a good or product. Inform students that these are their guidelines:
 - a. Each team may produce just one good or product.
 - b. Each team will receive 10 minutes to work.
 - c. Teams can only use the natural resources in their box and the two capital resources provided.
 - d. Teams should be as creative as possible.
 - e. Each team should pick a reporter that will tell the class about the product.
2. Allow each team to produce their good. After 10 minutes, have each team share its good/product with the class. Discuss:
 - a. What items were used from the box?
 - b. Would you have been able to create anything without the capital resources?
 - c. What else, besides the natural resources and capital resources, was necessary to produce a good or product? (*PEOPLE*)
 - d. Explain to the students that they (people) are a type of resources too. People are **human resources**. Human resources are the quantity and quality of human effort directed toward producing goods and services. As an example, ask students for examples of human resources working at school (teacher, principal, cafeteria workers, janitor, nurse, librarian, bus driver)
3. Explain to the students that you will be using one of Minnesota’s most important industries to demonstrate how natural resources, capital resources, and human resources are all used together to produce goods. This important industry is agriculture. Ask students to share what they know about agriculture. Prompt

students to name as many livestock or “farm” animals as possible – including sheep!

Activity 3 – Sheep Resources

1. If possible, display the Minnesota Agriculture Commodity Card for sheep and share some of the information on the card or included in the background of this lesson. Ask students:
 - a. What kind of resource is a sheep? (*natural*)
 - b. What parts of a sheep are used to produce goods? (*wool, meat, milk, bones, manure, leather/hide*)
2. Hand out the *Sheep Resources worksheet*. Have students work individually or in teams to complete the worksheet. Answers:
 - a. Produced from wool – *sweaters, suits, scarfs, hats, gloves, blankets, carpet*
 - b. Produced from meat (called lamb) – *lamb chops, roasts, ground lamb, sausages*
 - c. Produced from milk – *cheese, butter, yogurt*
 - d. Produced from bones – *buttons, jewelry*
 - e. Produced from leather/hide – *shoes, bags, belts, gloves, caps*
 - f. Produced from manure – *fertilizer, fuel for heating*
3. Review and discuss the worksheet with the students. Tell students that you are going to focus on the sheep’s wool for your next activity. Display some of the wool items that you have collected and ask students what makes wool different from other fabrics like cotton, polyester, etc. (*wool is natural, very durable, comes from animals, very warm*)
4. Hand out the *Sheep-to-Sweater Process worksheet*. Read aloud or have students read in pairs or by themselves.
5. Hand out the Sheep-to-Sweater Graphic Organizer. Assist students in thinking about and recording the types of resources used in each step of the process.
6. Review with students the definitions of natural, capital and human resources. Ask students to volunteer examples of each. Use sheep to also provide examples of each type of resource.

Additional Activities

- Have students experiment with spinning wool. Kits can be ordered from Utah Agriculture in the Classroom.
- View the video from Discovery / Science Channel's "How It's Made" Wool episode on YouTube.
<http://www.youtube.com/watch?v=uEYsmzophTA&feature=related>
- Invite a local sheep producer to visit your class or take a field trip to see how capital and human resources are used to raise this natural resource.

In accordance with the Americans with Disabilities Act, this information is available in alternative forms of communication upon request by calling 651/201-6000. TTY users can call the Minnesota Relay Service at 711 or 1-800-627-3529. The MDA is an equal opportunity employer and provider.

Name _____

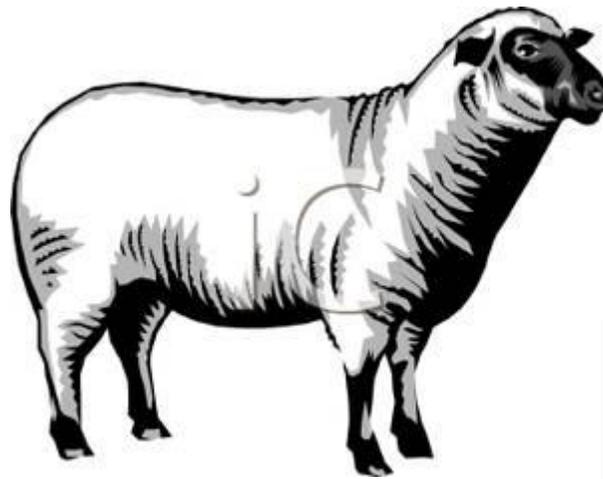
Sheep Resources

In each box, write the goods that can be produced from each sheep product.

Wool

Leather/Hide

Meat



Manure

Milk

Bones

Sheep-to-Sweater Process

How we get wool from a sheep's back to wear on our back!

Wool is a renewable, natural resource that grows on sheep. Wool is used to make a variety of clothing items such as sweaters, suits, socks, and pants, as well as carpet and blankets. The first step necessary in getting wool from the sheep to a sweater (or other cloth item) is shearing. Usually in the spring, a sheep shearer will use an electric hand clipper to shear all of a sheep's wool. The shearer uses long, smooth strokes close to the skin to remove the wool in one large piece called a fleece. The fleece from one sheep weighs from eight to ten pounds.

The second step in the sheep-to-sweater process is washing the wool to remove the grease that is naturally formed in wool. This grease is called lanolin and it is used in lotions, soaps, and make-up. Dirt, plant parts and other foreign materials are also washed out of the wool using very hot water and gentle soap. The wool then is squeezed using rollers to remove the water and dried in a chamber filled with hot air.

The clean and dry wool is then carded in the third step of the sheep-to-sweater process. The carding process passes the wool through a system of wire rollers to straighten the fibers. The rollers are many different diameters and turn at different speeds in order to form a thin web of wool fibers lying side by side.

The fourth step in the sheep-to-sweater process is spinning the wool. Small rollers stretch the wool fibers, and then the spinning machine twists and retwists the fibers into yarn. This yarn can be used for weaving or knitting.

The final step in the sheep-to-sweater process involves weaving or knitting the yarn. Weaving is done by a machine called a loom which interlaces two sets of yarn at right angles. The high-quality cloth that is produced from this weaving process is called woven fabric. The wool yarn can also be used in a knitting machine. Knitting machines use mechanical needles to interlock rows and loops of yarn. The cloth produced from knitting machines is called knit fabric.

Wool fiber absorbs dyes very deeply and easily so dyeing wool a specific color can be done at any stage in the sheep-to-sweater process. After this process is complete the wool fabric or clothing item is inspected for quality. A complete examination of the cloth identifies if there are any broken threads, color problems, or other undesirable effects. These problems are removed and the area is reweoven if necessary. Finally, the sheep-to-sweater process is complete and a high-quality, all-natural clothing item is yours to wear!

Additional information can be found at http://www.sheepusa.org/Wool_Information

Name _____

Record the steps and resources used in each step of the Sheep-to-Sweater Process.

Step 1:
Natural Resources:
Capital Resources:
Human Resources:

Step 2:
Natural Resources:
Capital Resources:
Human Resources:

Step 3:
Natural Resources:
Capital Resources:
Human Resources:

Step 4:
Natural Resources:
Capital Resources:
Human Resources:

Step 5:
Natural Resources:
Capital Resources:
Human Resources:

Step 6:
Natural Resources:
Capital Resources:
Human Resources:

Name KEY

Record the steps and resources used in each step of the Sheep-to-Sweater Process.

Step 1: SHEARING
Natural Resources: SHEEP, WOOL
Capital Resources: ELECTRIC CLIPPER
Human Resources: SHEEP SHEARER

Step 2: WASHING
Natural Resources: WOOL (FLEECE), WATER
Capital Resources: HEATER, ROLLER, HOT-AIR CHAMBER
Human Resources: SUPERVISOR OF CLEANING AND DRYING PROCESS

Step 3: CARDING
Natural Resources: WOOL
Capital Resources: CARDING MACHINE
Human Resources: SUPERVISOR OF CARDING MACHINE

Step 4: SPINNING
Natural Resources: WOOL
Capital Resources: SPINNING MACHINE
Human Resources: SUPERVISOR OF SPINNING MACHINE

Step 5: WEAVING AND KNITTING
Natural Resources: WOOL YARN
Capital Resources: LOOM, KNITTING MACHINE
Human Resources: OPERATOR OF LOOM, KNITTING MACHINE

Step 6: INSPECTION
Natural Resources: WOOL FABRIC
Capital Resources:
Human Resources: INSPECTOR