

Overview

Students identify products they use in their daily activities, and discover the rocks and minerals used to make them.

Source: This lesson has been adapted for Saskatchewan. The original lesson is from the EdGeo Publication Bringing Earth Science to Life: Natural Resources.

Duration: One class

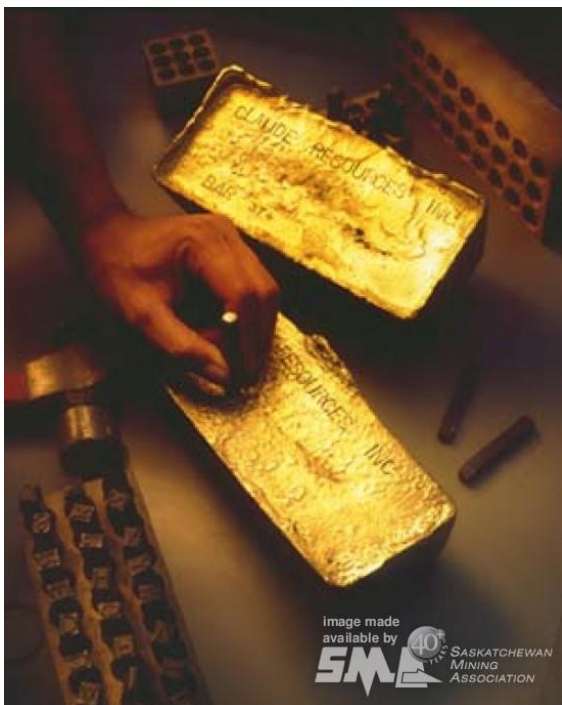
Materials:

List of Natural Resources in Everyday Products
Paper
Student Discussion Questions
Teacher Answer Sheet

Instructional Methods:

- Independent learning, guided inquiry, discussion

Learning Outcomes and Indicators



SCIENCE

Grade 4: Rocks, Minerals and Erosion

RM4.2 Assess how human uses of rocks and minerals impact self, society, and the environment.

- Identify objects in their local environment that are made from rocks and minerals (e.g., nickel, table salt, pottery, cement, carvings, brick, jewellery, bicycle, nutrients, battery, copper wiring, soda can, plumbing pipe, and sidewalk).

Grade 5: Properties and Changes of Materials

MC5.3 Assess societal and environmental impacts that result from the production, use, and disposal of raw materials and manufactured products.

- Research a product to determine the raw materials from which it is made, and describe the changes required to the natural materials to manufacture the product. (partial fit)

Grade 7: Earth's Crust and Resources

EC7.2 Identify locations and processes used to extract Earth's geological resources and examine the impacts of those locations and processes on society and the environment.

- Identify locations of Saskatchewan's primary mineral resources (e.g., potash, gold, diamond, salt, uranium, copper, and graphite) and their primary uses.

EARTHSCIENCE 30

Lithosphere

ES30-LS3 Investigate the processes and technologies used to locate and extract mineral resources and fossil fuels locally, provincially and globally.

- Identify the location, method of extraction, uses and economic impact of major fossil fuel and mineral (e.g., gold, diamond, rare earth elements, copper, zinc, kaolin, coal, potash, uranium, salt, and sodium sulphate) resources.

Energy and Resources 10,20,30

Goal - Awareness: To provide students with an awareness of the nature, technology and products of Saskatchewan's energy and mining industries, as well as the related goods, services and processes that support those industries.

SOCIAL STUDIES

Grade 4: Resources and Wealth

RW4.3 Assess the impact of Saskatchewan resources and technological innovations on the provincial, national, and global communities.

d. Illustrate the goods made from the major natural resources, the consumers of those goods and the export destinations.

Source: [Saskatchewan Evergreen Curriculum](#)

Big Picture Question

1. Why is mining so important?

Background Information

Our lives are made more convenient by the resources we use throughout the day. Many of these resources are imported to Saskatchewan and Canada from other countries but some can be supplied by the province or country.

Natural resources are materials occurring in nature that can be used for economic gain, i.e. made into consumer goods. Natural resources include plants (trees, crops), animals, fossil fuels (oil, coal, gas), and rocks and minerals. Canada's natural resource industry is the backbone of our economy and among the most productive, high-tech sectors in the global economy.

We use rocks and minerals for every conceivable purpose. Early humans used them for tools, weapons and building materials. Today, every product we use comes from plants, animals, minerals or fossil fuels, or combinations of them. By far the most common product source is minerals. Even products that are not made directly from minerals are manufactured using metal machines,

and all metals are made from minerals.

THE ACTIVITY

(Independent learning, Guided Inquiry, Discussion)

Motivational Set (5 minutes)

Show the students the video. "**Why Minerals Matter to You**" (*This video can be downloaded from the WHERE Challenge site*)

Activity:

1. Have students divide a large sheet of paper into three parts, labelled morning, afternoon and evening.
2. In each part, ask students to write down what things they might be doing at these different times of day.
3. Distribute the list of Natural Resources in Everyday Products.
4. Direct students to fill in each section of the day with products they would use and the resources needed to make those products. Products can be repeated as necessary.
5. Have students highlight the resources found in Saskatchewan.
6. Ask several of the students to share an item or two, from their lists, with the rest of the class.
7. Have students answer the questions and discuss in class.

Assessment Method and Evidence

✓ Three Part Chart

- Students will discover that many of the items they use in daily life are made up of minerals/metals that were mined.
- Students will come to the realization that the equipment and processes used to create items are made of or use minerals and metals.
- By completing the chart students will have identified items in their daily life that are made of minerals/metals.
- Students will be able to list some of the minerals and metals they use every day.
- Students will be able to list some of the minerals that are found in Saskatchewan and their primary uses.

✓ Discussion Questions

- Students will make the personal connection that minerals, metals and mining may or may not play an important role in their lives and be able to explain why.
- Students will realize that Saskatchewan has many mineral resources and be able to list some of them.
- Students will start to think about what items are made of and be able to explain the connection between consumers, material goods, and mining.

Extension

1. Display everyday items and samples of the rocks and minerals they contain. Then separate these products from the corresponding resources, and see if students can match them again.
2. If students are curious about some of the minerals/metals on the list, they can go to the website
<http://www.nwma.org/education/Uses%20for%20Minerals.htm> to find out more.
3. Choose an item and enter the WHERE Challenge.
<http://earthsciencescanada.com/where/>

Resources

Bringing Earth Science To Life: Using Natural Resources. EdGeo Canadian Earth Science Teacher Workshop Program. Available at:
<http://www.edgeo.org/images/pdf/bringing-earth-science-to-life/natural-resources.pdf>

Earth Sciences Canada WHERE Challenge. Available at: <http://earthsciencescanada.com/where/>

Northwest Mining Association. Uses of Minerals. Available at:
<http://www.nwma.org/education/Uses%20for%20Minerals.htm>

Saskatchewan Energy and Mines Mineral Resource Map. Available at:
<http://www.economy.gov.sk.ca/resourcemap>

Or purchased at:
Energy and Resources.
300 - 2103 11th Avenue and 200 - 2101 Scarth Street
Regina, SK
S4P3Z8, Canada
Tel. (306) 787-2528
Web Site. <http://www.er.gov.sk.ca/>
Available as 8.5 x 11 and 31 x 48 maps.

NATURAL RESOURCES IN EVERYDAY PRODUCTS

Resources found in Saskatchewan are in bold

PRODUCT	ROCKS OR MINERALS USED TO MAKE THE PRODUCT
Aquarium	Silica, sand, gravel
Baby powder	Talc
Batteries	Nickel , cadmium, lithium, steel, manganese dioxide, carbon, zinc , potassium hydroxide, ammonium chloride, lead, rare earth elements
Basement Foundation	Concrete (limestone, clay, shale, gypsum, sand , gravel)
Bike	Petrochemicals, iron, chromium, nickel , aluminum
Bike Helmet	Copper , zinc , iron, petrochemicals
Bread and cereals	Gypsum, salt , limestone
Car or bus	Clays, dolomite, metals, magnesium, silica, lead, nickel , chrome, iron
Carpet	Limestone, dolomite, barite
Ceramic tile	Limestone, gypsum, clay , aluminum
Clothes	Petrochemicals, aluminum
Computer	Silicon, copper , chromium, iron, nickel , silver, mercury, carbon, zinc , lead, tin, lithium, cadmium, rare-earth elements
Concrete	Limestone, clay , shale, gypsum, aggregates
Cosmetics	Talc, mica, kaolin, bentonite , calcite, dolomite, iron oxide, chrome oxide, manganese, soda ash, sulphur, titanium dioxide, gold
Countertop	Titanium dioxide, calcium carbonate, aluminum hydrate
Crayons	Petrochemicals, gypsum
Door key	Brass, copper , zinc , iron, chrome
Drinking water	Filtered by zeolite, fluorite, silver

DVD player	Silicon, copper , chromium, iron, nickel , silver, mercury, carbon, zinc , lead, tin, lithium, cadmium, rare-earth elements
Eaves trough	Zinc , iron or silica, borate, limestone, soda ash, feldspar
Electrical wires	Copper , aluminum, tin, zinc
External walls	Clay or stone
Fertilizer	Phosphorous, Potassium , magnesium
Fridge	Fluorspar, silica, tungsten, chrome, aluminum, antimony, beryllium, copper , iron, nickel , lead, tin, titanium, zinc
Gasoline	Oil direct from the ground, drilling for oil requires barite diamonds , metals
Glass	Silica sand
Golf clubs	Graphite, titanium
Heat	Coal , oil, gas, uranium
Household cleaners	Silica, pumice, diatomite, feldspar, limestone
Insulation	Silica, feldspar, vermiculite
Internal walls	Gypsum, clay , calcium carbonate
Jewellery	Gold , silver, platinum, nickel , chrome, diamond , garnet, opal, topaz, sapphire
Kitty litter	Zeolite, volcanic ash, pumice, clay , bentonite
Light bulbs	Tungsten, silica, copper , aluminum
Lipstick	Calcium carbonate, talc, mica
Linoleum	Calcium carbonate, clay, wollastonite
Medicines	Barite, calcium carbonate, zinc oxide , salt , gold , mercury, magnesium, kaolin, lithium, iodine
Microwave oven	Steel, copper , silica, aluminum, beryllium, iron, molybdenum, nickel , titanium, tungsten, zinc
Mirror	Silica sand , silver

Money- coins	Gold , silver, nickel , chrome, aluminum, brass, copper
Money - paper	Kaolin, clay
Nails and screws	Iron ore, zinc , brass, steel
Paint	Titanium, dioxide, kaolin clays, calcium carbonate, mica, talc, silica, wollastonite
Paper	Kaolin, clay, titanium dioxide, sodium sulphate, soda ash
Paper clips	Iron, clay, limestone, zinc
Pen	Barite, oil products
Pencil	Graphite
Planting soils	Vermiculite, perlite, gypsum, zeolite
Plastic	Oil from the ground
Plates and dishes	Gypsum, limestone, clay , silica
Plumbing	Copper , zinc , nickel , chrome, tin, lead, iron, petrochemicals
Pop can	Aluminum
Porcelain toilet	Limestone, gypsum, clay
Pots and Pans	Aluminum, iron, steel
Power tools	Zinc , copper , iron, molybdenum, tungsten, chromium, vanadium
Roads	Sand , gravel , crushed stone , iron oxide , limestone
Roof	Silica, borate, limestone, soda ash, feldspar, talc
Sandpaper	Garnet, diamond
Siding	Aluminum or silica, borate, limestone, soda ash, feldspar
Sports equipment	Graphite, fiberglass
Stove	Steel, copper , silica, aluminum, beryllium, iron, molybdenum, nickel , titanium, tungsten, zinc
Sunscreen	Titanium dioxide, zinc

Swimming pool	Diatomite, zeolite, salt
Telephone	Silica, copper , chromium, iron, nickel , silver, mercury, carbon, lead, zinc , tin, rare-earth elements
Television	Silicon, copper , chromium, iron, nickel , silver, mercury, carbon, zinc , lead, tin, lithium, cadmium, rare-earth elements
Toothpaste	Calcium carbonate, limestone, sodium carbonate, zeolite, silica, fluorite
Vitamins	Zinc , lithium, iron
Watch	Silicon, copper , chromium, iron, nickel , silver, mercury, carbon, zinc , lead, tin
Windows	Iron, silica sand , and feldspar

Discussion Questions

1. What other products that use rocks or minerals/metals can be added to the list?
2. Is there an activity that you do that does not use rocks or minerals?
3. What are some of the minerals that can be found in Saskatchewan?
4. Think about one item that you just could not do without. What if the main mineral in that item was currently found in only one country and they decided not to sell it to other countries.

What would that mean for you and others who like the same item?

What could be done about it?

5. Why is mining important to you?

Discussion Question Answers

1. What other products that use rocks or minerals/metals can be added to the list?

Answers will vary. Dish soap, laundry soap, binders, rulers, play ground structures, steel school doors, door knobs, bathroom taps

2. Is there an activity that you do that does not use rocks or minerals?

Answers will vary. One possibility would be swimming in a lake in a natural fibre bathing suit with no metal. Remind students that although products may be natural fibre, there are minerals /metals used in harvesting, transportation and manufacturing.

3. What are some of the minerals that can be found in Saskatchewan?

Uranium, copper, nickel, cobalt, gold, zinc, rare earth elements, potash, salt, potassium sulphate, sodium sulphate, clay, coal, silica sand, diamonds as well as oil and gas resources.

Saskatchewan currently has uranium, gold, coal, sodium sulphate, and potash mines. There is however the potential for mines to develop in the other minerals.

4. Think about one item that you just could not do without. What if the main mineral in that item was currently found in only one country and they decided not to sell it to other countries.

What would that mean for you and others who like the same item?

That item would no longer be available to you. When it broke it would not be replaced.

What could be done about it?

Manufacturers could find another mineral/metal to use.

Other countries could explore for the mineral/metal in their own country.

5. Why is mining important to you?

Answers will vary.