

Virginia's Rock and Mineral Resources

Strand	Earth Resources
Topic	Investigating natural resources
Primary SOL	4.9 The student will investigate and understand important Virginia natural resources. Key concepts include c) minerals, rocks, ores, and energy sources.
Related SOL	4.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations in which m) current applications are used to reinforce science concepts.

Background Information

Some of Virginia's important rock and mineral resources include coal, limestone, granite, and sand and gravel. The coal in western Virginia was created about 300 million years ago. Most of the coal is located in Buchanan, Wise, and Dickerson Counties on the Appalachian Plateau. A very small amount of coal is burned to heat homes while about 56% is used to produce electricity nationwide. Limestone is used for making cement and is also used to neutralize soil acidity, increase plant nutrients, organic matter, soil organisms, and trace elements. Gravel, granite, and sand are used for construction purposes.

Materials

- Copies of a K-W-L chart for each student
- Sample products made from Virginia's rock and mineral resources, such as:
 - Coal – paint thinner, a representation of electricity
 - Limestone – cement, mortar, toothpaste
 - Granite – countertops
 - Sand – glass beads, sandpaper, hour glass timer
 - Gravel –driveway stones
- Chart paper
- Research materials: trade books, encyclopedias, or Internet access

Vocabulary

mineral, resources, coal, natural resources, man-made resources, limestone, granite, sand, gravel, ores, energy sources, renewable resources, nonrenewable resources, reservoirs, aggregate, masonry, septic tanks, mortar

Student/Teacher Actions (what students and teachers should be doing to facilitate learning)

Introduction

1. Ask students to brainstorm what they think rock and mineral resources in Virginia are. Remind students to think about the root word of mineral (mine) to help them determine from where rocks and minerals might come.

2. Give each student a K-W-L chart. Have each student fill in the “K” part regarding what they already know about Virginia’s rock and mineral resources from the class discussion. Then, ask students to come up with questions about what they would like to learn, and tell them to fill in the “W” part with these questions.
3. Explain to students they will be researching rock and mineral products that are found in Virginia.

Procedure

1. Hold up each product made from rock and mineral resources found in Virginia, and have students predict what resources they think are used in the production of each. Write the student-generated list on chart paper, and post it on the wall.
2. Allow students to use trade books, encyclopedias, and computers with Internet access to conduct research on what rock and mineral resources are mined in Virginia and what uses these rocks and minerals have. They should include the following:
 - Coal — energy
 - Limestone — foundations, sidewalks, filling for the back of carpet, reservoirs for groundwater and ore deposits, cement, building stone, concrete aggregate, agricultural lime
 - Granite — building and ornamental stone, aggregate, countertops
 - Sand — aggregate, concrete and masonry uses, glass, septic tanks, riverbeds, mortar, man-made building stone
 - Gravel — aggregate, concrete and masonry uses, driveways, roads

Conclusion

1. Once again, display the products made from rock and mineral resources found in Virginia, and have students name the resources used in the production of each. Compare this list to the one produced earlier.
2. Have students complete the “L” part of their chart for what they have learned about rock and mineral resources as well as the differences between the various rocks and minerals.

Assessment

- **Questions**
 - What are the different rock and mineral resources in Virginia?
 - Why are the natural resources important?
- **Journal/writing prompts**
 - Have students choose one of Virginia’s rock and mineral resources and explain how it is used and why Virginia’s resources are important.
 - Describe the differences between the natural and the man-made resources.
- **Other**
 - Create a flipbook to compare the differences between the resources.

Extensions and Connections (for all students)

- Provide a collection of rock and mineral resources for students to handle.

- Direct students to create rock and mineral books and draw or provide pictures and include facts about the rocks and minerals.
- Invite an employee from the department of natural resources to discuss conservation and use of state resources.

Strategies for Differentiation

- Create Venn diagrams that compare the similarities and differences between various rocks and minerals.
- Direct students to create a timeline that shows the development of rocks and minerals and focuses on the amount of time needed to create the resource discussed.
- Generate a list of ways that rock and mineral resources can be conserved.