

RESEARCH PROJECT: USING WRITING AND MATHEMATICS ACROSS THE CURRICULUM TO STUDY MINERAL RESOURCES

STANDARDS

See summary of National Science Education Standards.

Original: <http://books.nap.edu/readingroom/books/nses/>

Standard Concept	General standard	Specific standard	General standard	Specific standard	General standard	Specific standard
Grade Level		K-4		5-8		9-12
Science as Inquiry (A)	Abilities ... to do ... inquiry	A.1.4.1				
		A.1.4.2				
		A.1.4.3				
		A.1.4.5				
	Understandings about ... inquiry	A.2.4.2				
Physical Science (B)	Properties of ... materials	B.1.4.1	Properties of ... matter	B.1.8.1		
		B.1.4.2		B.1.8.2		
Earth Science (D)	Properties of Earth materials	D.1.4.1				
Science and Technology (E)	Understanding about science and technology	E.2.4.2	Understanding about science and technology	E.2.8.2	Understanding about science and technology	E.2.12.3
		E.2.4.3				E.2.12.4
		E.2.4.4				
	Distinguish between natural and human-made objects	E.3.4.1				
		E.3.4.2				
Science in ... social perspectives (F)	Types of resources	F.3.4.1			Natural Resources	F.3.12.1
		F.3.4.2				
		F.3.4.3				



	Science and technology in local challenges	F.5.4.1	Science and technology in society	F.5.8.3		
		F.5.4.2		F.3.8.4		
				F.3.8.5		
				F.3.5.6		
					Science and technology in ... global challenges	F.6.12.2
						F.6.12.3
						F.6.12.4
History and nature of science (G)	Science as human endeavor	G.1.4.1	Science as human endeavor	G.1.8.1	Science as human endeavor	G.1.12.1
		G.1.4.2		G.1.8.2		G.1.12.3
		G.1.4.4				
					Historical perspectives	G.3.12.1
						G.3.12.3
						G.3.12.4



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INTRODUCTION

Observations of rocks and minerals leads to opportunities for students to research the uses of the minerals. This research can then be written up to include skills in language arts, science, and mathematics.

OBJECTIVE:

Students will study the commercially useful minerals and rocks and apply skills of research, writing, and business arithmetic, and learn the importance of earth science in daily life.

MATERIALS

Samples of minerals and mineral products from a local industry

TIME ALLOTTED:

Increments over several weeks.

PROCEDURE:

- 1) Select mineral products for which a mining, processing, or distributing company is in the local phone book.
 - a) Examples:
 - i) gypsum (i.e., plaster of Paris, wallboard, agricultural supplements);
 - ii) diatomite (swimming pool filters, other filters);
 - iii) gold (jewelry, dental supplies, electronics, coins);
 - iv) silver (jewelry, photography, electronics);
 - v) sand and gravel (aggregate for concrete);
 - vi) cement (the “glue” in concrete);
 - vii) granite (building stone);
 - viii) marble (building stone);
 - ix) pumice (abrasive cleaners, landscaping).
- 2) Divide the class into groups.
 - a) Assign a product to each group.
- 3) Schedule a research day
 - a) Include a trip to the library to read the encyclopedia on the commodity and to do internet research.
 - b) Sample search: “cement and industry.”
 - i) If possible, use the internet or the Encyclopedia of Associations to identify a trade association, such as the Nevada Mining Association.
- 4) Have students in each group practice writing a letter to the trade association requesting information and to a local store or office identified in the phone book.
 - a) Mail the best letters, but see that every group initiates at least one contact with a store and/or association.
- 5) Phone calls are often the best source of information.



- a) Help the students to make phone calls to the local store or outlet.
- b) Discuss phone etiquette.
- 6) Each group should produce a written report about the following information:
 - a) Mineral or rock's properties and uses.
 - b) The way it is sold (in bags, by the ton, etc.)?
 - c) How long, how far, etc. would a standard purchase go, cover, last, etc.; (math application)
 - d) Is there a national or local trade association?
 - e) Is there a local vendor?
 - f) Illustrate the report with pictures of the mineral or rock and product.
- 7) The group should report to the class as a whole.
- 8) If possible, select a local mine and/or vendor and take the whole class on a field trip.

Useful websites:

- Nevada Bureau of Mines and Geology: <http://www.nbmgs.unr.edu/>
- Nevada Division of Minerals: <http://minerals.state.nv.us/>
- Pabco Gypsum: <http://pabco gypsum.pacocoast.com/default.asp?pageID=173>
- Associated Builders and Contractors, Southern Nevada Chapter: <http://www.abcsouthnv.org/directory.htm>

