

# Geological Education: Understanding the Role of Minerals in Society

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[Aller au sommaire du numéro](#)

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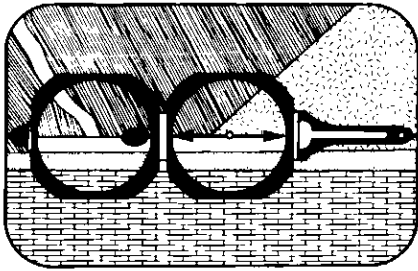
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# Features



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## Geological Education

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### Understanding the Role of Minerals in Society

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"One of the most important things I have learned about mining is how closely it affects my life and the lives of many others" – Grade 7 student in B.C.

"My stereotyped negative image of mining has been totally reversed" – Toronto area teacher.

"Our children, as well as enjoying their studies, are now better able to identify with our mineral resources. We hope this project will be continued" – A parent.

"I am proud to say that we have contributed to this project over the last two years. I consider this to have been money well spent and cannot recommend the project highly enough" – Mining Company President.

These people are talking about the National Curriculum Development Project sponsored by the Canadian Mining and Metallurgical Foundation. It is the same project which in 1977 became the education project of The Canadian Institute of Mining and Metallurgy (CIM). The CIM through the Canadian Mining and Metallurgical Foundation supports educational and charitable activities to improve the contribution of the Canadian mineral industry to the progress and well-being of Canada.

The objective of the Project is to acquaint every Canadian school child with the mineral industry and help them identify with the people developing our mineral resources and to understand the contribution of minerals to our lives, past, present and future.

#### History of the Project

The history of the project began in 1974 when the Council of The Canadian Institute of Mining and Metallurgy (CIM) instructed the CIM General Committee on Education to:

"develop a national program to coordinate the efforts of industry and other organizations to get the departments of Education, regional school boards, and individual teachers to place more emphasis on the mineral industry in the teaching of science, economics and social studies; and that details of the national program be prepared and submitted to the CIM Executive Committee of Council for evaluation at an early date."

The General Committee began by initiating several educational programs and CIM Branches in Northeast Ontario, Sudbury, Winnipeg, and Vancouver started their own projects, consisting mostly of providing teach-

ing aids and/or speakers to schools.

The CIM Vancouver Branch was fortunate to have met Dr. Doreen Binnington in 1975. A member of the Faculty of Education at the University of British Columbia, her speciality is curriculum development based on the humanistic or the identity approach. The CIM Vancouver Branch sponsored Dr. Binnington to conduct a feasibility study to determine whether or not teaching resources on the mineral industry could be developed by teachers.

In November 1976, the CIM Vancouver Branch presented its project to the CIM General Committee on Education and to the Mining Association of Canada, at which time Dr. Binnington was retained to expand the B.C. project across Canada. At the 1977 CIM Annual General Meeting the project was unanimously endorsed by CIM Council to become the national education project of the CIM, with Mr. Douglas Sloan as Director and Mr. Kal Opre as Project Co-ordinator.

CIM Council charged the Canadian Mining and Metallurgical Foundation with fundraising. The Foundation was registered in 1972 under the Consumer and Corporate Affairs Act as a non-profit organization to create and support educational and charitable activities on the behalf of Canada's mineral industry. The CIM provided \$50,000 in seed money and the Prospectors' and Developers' Association was quick to follow with their donation of \$20,000. Fund raising is continuing in both eastern and western Canada.

#### Project has Unique Approach

The National Curriculum Project uses a *participation approach* when developing *teaching units* to be used in Social Studies for *elementary grades*.

The *participation-approach* enables students to identify with the world of work and with our country's mineral resources through participation in activities and events in the lives of people involved in the Canadian mineral industry.

The *teaching units* consist of guidelines for teachers and students and student materials such as printed matter, audio-visuals, models, samples, maps, and blueprints for classroom use over a six week period. These teaching units are developed by teachers trained by the Project in curriculum development. Basic skills such as reading, writing, mapping and oral communications are emphasized and applied to social, economic and scientific aspects of the mineral industry. The following topics were selected from the Curriculum Guidelines for Social Studies.

- Grade 1, families today and families long ago.
- Grade 3, *community-interaction*; between local community and communities elsewhere.
- Grade 5, the *history* of mining communities today and the history of mining communities long ago.
- Grade 7, mining and metallurgy and life today and mining and metallurgy and life in the Middle Ages.

All these topics are enriched by information and materials from the mining industry that are processed by Dr. Binnington at U.B.C., by Professor Bowles at University of Toronto and their teams of teachers. They are assisted by advisory committees from universities and industry.

*Elementary-grades* were selected because the process of identification with others is a natural characteristic of young children. Positive and negative attitudes develop rapidly in early years and have a profound and subconscious effect on the likes and dislikes of the adolescent and the adult.

As parents and grandparents usually become involved in the school activities of children in elementary grades, the Project touches these two additional age groups as well.

**Extensive Support by Universities**

Administration, counselling and evaluation of the Project, of its effects and its progress are the most valuable contributions by the educational sector. From the beginning Universities have provided funding for personnel and offices, use of computers, microfiche, library, and audio-visual services, while school boards paid travel and substitution costs for their teachers to participate in the Project.

**Many Elements Contribute to Success**

To sum up, the National Curriculum Project

- 1) involves all segments of society, and the total fabric of the business world and educational institutions.
- 2) is supported by the combined financial and material contributions of all these sectors.
- 3) contributes to teachers' professional development.
- 4) provides more-needed direction and cohesion to the mining industry's educational efforts.
- 5) produces materials on the mineral industry that cannot be dismissed as "just another public relations effort by industry".

- 6) is developing portable materials and strategies.
- 7) is not political.
- 8) is school-based and Canadian.
- 9) is preparing the future educational market for its products through its own development within school districts of Canada's two largest provinces.

The National Curriculum Project is scheduled to complete its current phase of unified development in British Columbia and in Ontario in 1978. Ways and means are now being considered for the publication and dissemination of its nationally portable products along with its expansion into other Provinces in 1979.

Completing ongoing programs in two Provinces as well as starting the Project in others, remains a question of available funds. Besides mining companies, the fundraisers are approaching the support industry, suppliers, unions, banks, accounting firms, professional services and individuals for contributions. Associated groups such as the Mining Women's Association of Greater Vancouver are assisting the project with materials and other services.



**Figure 1**  
Grade 7 students in B.C. built a model of an open pit mining operation to familiarize themselves with the people and processes in mining. The students and teachers in B.C. and Ontario are involved in the

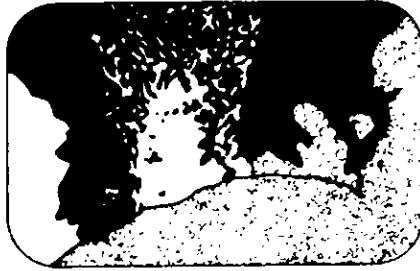
*National Curriculum Development Project of The Canadian Mining and Metallurgical Foundation which is designed to acquaint every Canadian school child with the people and processes in mining and the role of minerals in society.*

### Investment in Canada's Future

The Executive and education committees of the CIM and the Canadian Mining and Metallurgical Foundation believe that the National Curriculum Project more than fulfills Council's mandate as it unites educators and industry in creating teaching materials related to mining.

In today's mining, the costs of exploration for a promising property are considered to be logical and necessary investments. Educators along with the Executive and numerous members of The Canadian Institute of Mining and Metallurgy and the Foundation believe the funds for the National Curriculum Project to be not only logical and necessary but essential investments, because only the knowledge and positive attitudes of tomorrow's generation can guarantee the future which our country and its mineral industry deserve.

MS received July 5, 1978




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## Pyroclasts

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Ward Neale

### Another Prize to a Senior Citizen

We cleaned up three Canadian young-scientist-of-the-year awards a few years ago (Steacie Prizes to Dave Strong, Fab Aumento and Chris Garrett) as geoscience finally began to feel its oats and make a notch in the established pecking order. Now some old-timers (40 plus) are beginning to reap their rewards for staying with the trade and resisting the lush life in administration. We salute *Ray Price* of Queens who is the latest to cop a prestigious senior Killam Fellowship, following Hank Williams (M.U.N.) and Len Hills (Calgary) who scored earlier. These gigantic awards (40 plus) enable the recipients to buy themselves a term or two away from teaching and still have enough left over to supply boot grease and axe handles for the field season. It's good to have finally drilled deep into this zone of high honours and large grants after over a half century on a crustal diet. Congratulations Ray.

### The Rich Get Richer

Now that university geoscience is moving into the big leagues it must avoid the problems that excessive wealth has caused some chemists, physicists and engineers. I was reminded of this the other day when the recipient of a large award told me that when another agency had heard about it they had cut the amount they intended giving to him. I could not weep because I am beginning to doubt the efficacy of double, triple and quadruple grants to the same person for essentially the same set of projects. There is a good case to be made for heavily backing known

winners – people producing first-rate science can sometimes produce more of it if they have more money for graduate students, technicians and equipment. But there is a point of diminishing returns which varies from person to person depending on his or her temperament, life style and related factors. Large grants usually come just as the distinguished scientist is becoming increasingly enmeshed in the affairs of men, with much less time for field and lab. The big grant holders then apportion out their moneys to less fortunate colleagues to pursue the grant holder's (but not necessarily their own) pet projects. Awards committees are really abrogating their responsibilities when they allow such (sometimes faded) superstars the financial muscle to tailor colleagues' creativity to fit unlikely molds.

Now that our science is receiving more support from several sources we must ensure proper distribution to achieve maximum research results. Most awards committees consist of two factions: those who believe in sharing the pie as equitably as possible; and those who believe in supporting those they identify as the best scientists to the maximum with a few crusts cast to a handful of the common herd. For many years the decision-makers in geoscience belonged chiefly to the first school. They gave something to everyone but no one received enough to do anything worthwhile except those who were only seeking a little extra vacation travel money. Then the pendulum began to swing slowly the other way and we may have already passed the optimum point for there is growing evidence that the second school of thought now dominates the decisions. One of its failings can be the equating of big science with good science and the tendency to neglect those good people whose material needs are small. This may tempt well-published scientists to apply for money beyond their needs, a temptation enhanced by the tendency in university circles to equate size of grants to quality of research and potential for promotion. Another pitfall of the big grant syndrome is the reluctance, having identified research leaders, to admit that some of the chosen elite haven't performed up to expectations. It is