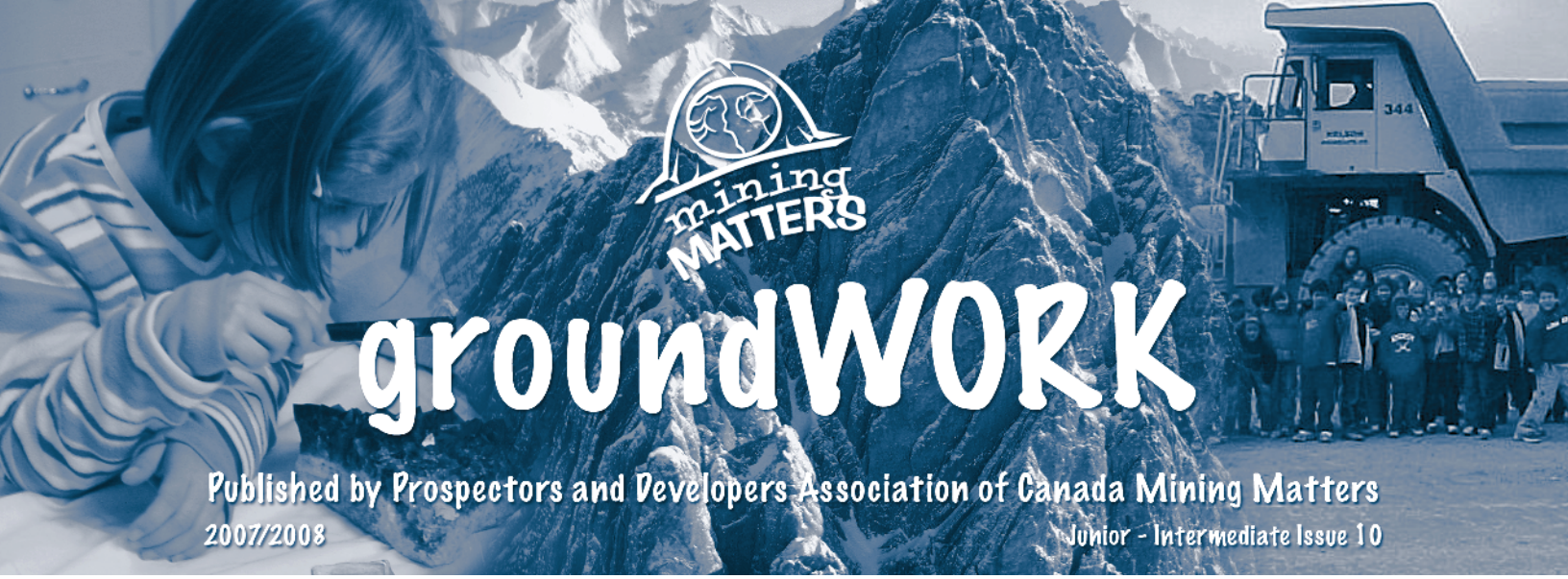

groundWORK

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2007/2008
Junior - Intermediate Issue 10

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Please share this newsletter with other teachers and librarians.

Thank You!

Keeping Pace

Like every school year, 2007/08 presents an abundance of challenges and fantastic opportunities. One such challenge is the implementation of the soon-to-be-released 2007 Revised Ontario Science and Technology Curriculum. Never fear... *Mining Matters* has been working hard to help meet your Earth science needs by undertaking revisions to our Junior and Intermediate units: *Deeper and Deeper* and *Mining Matters II – The Earth's Crust.*

We are pleased to say that both of the current units remain pertinent and valuable resources for Grade 4 and 7 classrooms; however, *Mining Matters* plans to make the units even better. Many of your favourite *Deeper and Deeper* lesson plans will remain unchanged, and of course, the unit will continue to fulfill 100 per cent of the Earth and Space Systems strand: Rocks and Minerals. However, we plan to integrate even more Computer, Language Arts, and Media Literacy lessons in support of the Revised 2006 Language curriculum. *Mining Matters II – The Earth's Crust* continues to support many overall and specific Grade 7 Science and Technology expectations in the Life Systems and Heat in the Environment strands, as well as many expectations in the Grade 7 Geography strand: Natural Resources.

Over the coming months, visit the *Mining Matters* Web site for new lessons and ideas for utilizing our kits in your classroom. *Mining Matters* prides itself on building long-term partnerships with teachers like you, by providing relevant, accurate, and authentic Earth science resources for the classroom, designed by teachers for teachers. We renew this commitment to you by changing with your needs.

Hope you're having a great year!

Sincerely,
The *Mining Matters* Team

New Resources

Mining Matters has been hard at work to bring you fresh, new resources to support Earth science learning in your classroom. To order more copies of these teaching tools please contact *Mining Matters* or go to the listed Web site.

From Northern Lights to Urban Trails

Poster

Educators and designers from across the country came together with *Mining Matters* to illustrate anew how "mining makes it happen." *From Northern Lights to Urban Trails* highlights the exciting world of the snowmobile and the metals and minerals that go into it. The colourful two-sided poster puts information at your students' fingertips and teaches the crucial role of mined materials in everyday life. In hand or displayed on the wall, this resource will certainly attract students' attention!

silica COPPER **GOLD** diamonds **titanium** **TIN** MOLYBDENUM
indium IRON **IRIDIUM** zirconium ZINC **lead** YTTRIUM **vanadium**
ALUMINUM **boron** chromium nickel **TUNGSTEN** oil & gas

NickelQuest: Virtual Mine Tour

DVD

Next on the list is *NickelQuest*, the Ontario Mining Association's virtual mine tour project for Grades 7 to 9. The video brings to the classroom the experience of touring an underground nickel mine in Sudbury. Created with attention to technical accuracy, this resource is the product of consultations with educators and advisors sharing a history of involvement in natural resources, Earth science, and mining education. Enjoy the film—popcorn not included!

Sharing the Story: The Inuksuk

Puzzle

Mining Matters thanks the Canadian Department of Indian and Northern Affairs for providing 10,000 Inuksuk puzzles to include with our newsletter.

To order more for your class, go to http://pse-esd.ainc-inac.gc.ca/pubcbw/catalog.asp Enter Kids' Stop in the Category box, and go to page 2 for Sharing a Story: The Inuksuk (puzzle).

2010 Connection: The Inuksuk

Once simply an Inuit tool to mark a significant event or place in the North, the Inuksuk has become a symbol of leadership, cooperation, and the human spirit. A contemporary rendition of the Inuksuk is now the emblem of the Vancouver 2010 Olympic Winter Games.

The Inuksuk, meaning "to act in the capacity of a human" in the Inuit language Inuktitut, is built to resemble the shape of a person with arms stretching out. Each Inuksuk is unique, its shape determined by the stones at hand.

The Inuksuk is a form of Inusugait, the term used for all forms of piled stones. Inuksuit (plural of Inuksuk) mark where a significant event happened and also help in the hunt of caribou herds. Other kinds of Inusugait show travellers and hunters the way home, warn of dangerous places, and indicate where food is stored.

Just as the Inuksuk acts in the capacity of a human in the Inuit world, this friendly rock structure extends open arms to the world in Canada's name.

Inuksuk Creative Writing

Mining Matters thanks teacher Lenna Rhodes for the following activities supporting Inuksuk studies.

Creative Writing with Purpose

Teacher, Lenna Rhodes, involved her Junior Division students in Sudbury, Ontario in an Inuksuk unit. She introduced the unit with *The Inuksuk Book,* by Mary Wallace, and invited a storyteller into the classroom to tell legends, which inspired student writing.

Students were asked to write instructions for a Grade 4 audience on how to build an Inuksuk. This assignment encouraged students to organize their thoughts and share information while learning meaningful facts about the Inuksuk.

Before the actual writing, students designed and illustrated a creative Inuksuk on paper. They had to pretend that they were going to actually build their Inuksuk and think about the selection of rock/stones they would need (i.e., size, colour, shape, texture, length, weight).

Book suggestions:

The Inuksuk Book by Mary Wallace

The Gift of the Inuksuk by Michael Ulmer

Make Your Own Inuksuk by Mary Wallace

Inuksuk Haiku Poetry

A Haiku is a three-line Japanese verse consisting of 17 syllables: five in the first line, seven in the second line, and five in the third line.

Lenna Rhodes wrote Inuksuk Haiku samples for teachers to post in their classrooms to motivate students to write their own Inuksuk Haikus. Students could illustrate their poetry, read their work to others, and compile the finished works into an anthology for the school library.

The Northern Inuksuk
I have northern roots
I stand tall towards the sky
In the Arctic Land

The Magnificent Inuksuk
I am a symbol
I represent the people
The human spirit

For more Inuksuk Haiku poetry, go to www.pdac.ca/miningmatters

Diamond Girls

Most women have a fondness for diamonds, and these days, they don't necessarily wait around for their partners to give them these sparklers. A trip to a jeweller will usually do the trick, but three Canadian women took their love of this mineral straight to the source. By following their hearts into geological realms, Eira Thomas, Catherine McLeod-Seltzer, and Pamela Strand have emerged as driving forces behind Canada's growing diamond mining industry.

From the time she was in kindergarten, Eira Thomas often accompanied her father, a mining engineer, into the field. So, it was no surprise when, in 1991, with her B.Sc. in Geology in hand, she went to work for her father at Aber Resources in Vancouver, B.C. Just three years later, Eira led the team that discovered a 2.5 carat diamond in the Lac de Gras region of the Northwest Territories, marking the beginning of today's successful Diavik Diamond Mine. She worked as a geologist with Aber Resources Ltd. (now Aber Diamond Corporation) for five years, took on the role of Vice-President Exploration in 1997, then served as director from 1998 to 2006. Today, Eira Thomas is President and CEO of Stornoway Diamonds Corporation, a company she founded with Catherine McLeod-Seltzer in 2003.

Catherine McLeod-Seltzer had family background in mining, but leaned toward the financial side of the industry. She studied for a business degree, then worked for Yorkton Securities, concentrating on Latin American mining opportunities. She went on to co-found gold-focused Arequipa Resources, which was bought out by Barrick Gold Corporation in 1996 for $1.1 billion. Catherine then took on co-management of the Pacific Rim Mining Corporation, focusing on exploration for precious metal deposits in Central and South America. In 2003, Catherine brought her financial expertise and enthusiasm for mining to the formation of Stornoway Diamonds, a company aiming to position itself as Canada's premier, growth-oriented diamond exploration and development company.

Pamela Strand is another firm believer in Canada's potential as a major diamond producer. With a B.Sc. in Geology from the University of Toronto and an M.Sc. from the University of Western Ontario, she headed to Yellowknife to work as a district geologist for the federal government. She was there when diamond frenzy hit the region in 1991 and got her first taste for diamond exploration. Later, when Pamela moved to Edmonton, she formed Shear Minerals Ltd.; since then the company has acquired mineral rights to extensive properties in the Northwest Territories, Nunavut, and Alberta. The company's Churchill Diamond Project in Nunavut attracted the attention of Stornoway Diamonds and BHP Billiton and, with their backing, is in the race to become yet another lucrative diamond mine in Canada.

While women do not figure prominently among today's crop of mining executives, Eira Thomas, Catherine McLeod-Seltzer, and Pamela Strand do their best to lead the way. And with increasing numbers of women graduating from Earth science studies these days, there may well be many following in their footsteps.

Photo Credit: BHP Billiton Diamonds Inc.

Rock Fun!

Different cultures have been balancing rocks for thousands of years. In 1998, after watching friends endlessly balancing sugar cubes, Canadian Malcolm Bisiker thought up a rock-balancing game. Based on natural rock formations from around the planet, ***ruk•shuk: The Game of Rock Balancing*** *challenges young and old to stack the rocks provided in record time. To learn more about this fun and addictive game, go to www.rukshuk.com*

Beautiful Geology

Ottawa area residents and visitors can get a close-up view of some of Canada's stunning natural art. Until January 6, 2008, Ottawa's Canadian Museum of Nature presents *On the Labrador*, a display of 30 spectacular large-format geology-based photographs of Labrador, shot by northern Quebec photographer Arnold Zageris. The photograph subjects range from the grandeur of Lake Tasisuak down to the detail of the minerals in the ancient mountain rock.

To take a look at some sample photos, go to http://nature.ca/exhibits/exs/labrador/index_e.cfm

Photo Credit: Arnold Zageris

Reflections of a Monolith

On an unusual windless day in Labrador this fractured rock brought out the clarity and colour of the water in Lake Tasisuak, a lake close to Nain, Labrador. This boulder fell from a high cliff not too long ago (geologically speaking). The remaining scar from where it came from high above on the cliff wall was still bright and fresh.

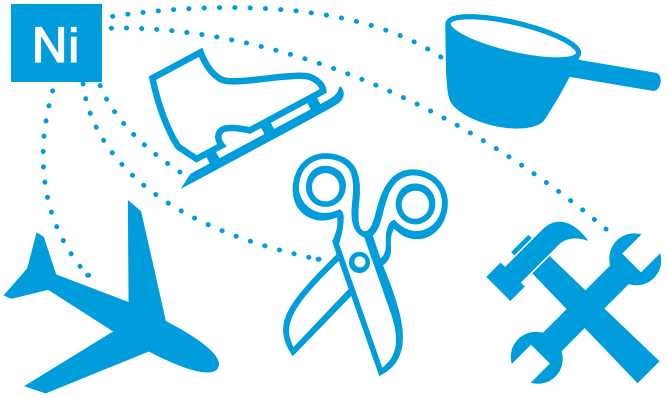
Nickel for Your Thoughts

The metallic element nickel (Ni), shortened from "Kupfernickel" meaning "Devil's copper," was discovered in 1751 and is the fifth most common element present in the Earth after iron, oxygen, silicon, and magnesium.

Many Canadians might guess that nickel's main use occurs in the production of coins, particularly that of nickels. In fact, today the Canadian nickel is a nickel-plated steel disc. According to the Nickel Institute, about 85 per cent of the 1 million tonnes of nickel mined yearly is alloyed with other metals.

Over 60 per cent of nickel is used in the manufacturing of stainless steels with various applications in buildings and infrastructure, chemical production, communications, energy supply, environmental protection, food preparation, water treatment, and travel. It is also used in numerous everyday household products such as rechargeable batteries, power tools, and kitchen appliances.

Nickel is vital to the Canadian mining industry, the third-largest nickel producer in the world. Currently, nickel is being mined in Thompson, Manitoba, the Sudbury Basin of Ontario, and the Ungava peninsula of Quebec. In 2006, mining began in Voisey's Bay, Newfoundland and Labrador, home to the largest known Canadian deposit of nickel.



To learn more about nickel, go to www.nickelinstitute.org

Rockwood: Cliffs, Caves, and Potholes

Rockwood Conservation Area, home to stunning limestone cliffs and a multitude of potholes, boasts of one of the most extensive cave systems in Ontario. It's no surprise, therefore, that this area, located roughly 11 kilometres east of the city of Guelph, welcomes over 65,000 visitors a year.

The unique geological history of the Rockwood area—a result of the most recent ice age dating back approximately 11,000 to 16,000 years—provides the perfect backdrop for programs and activities for children, schools, and families alike.

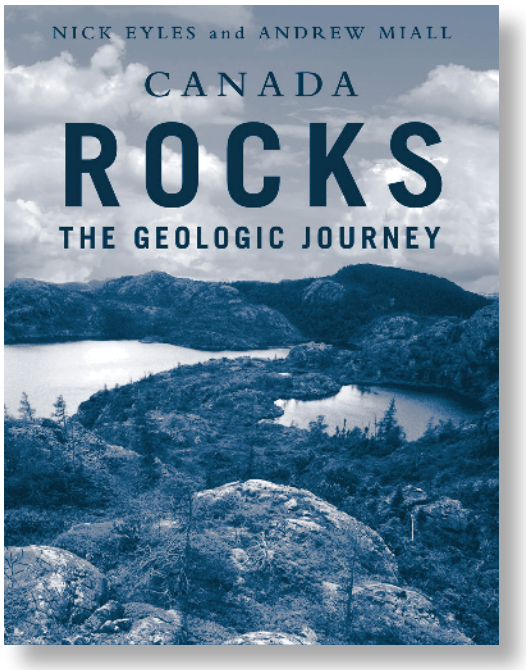
Photo Credit: Grand River Conservation Authority

Hot off the Press

Canada Rocks: The Geologic Journey

Anyone teaching Earth science will appreciate the marvellous Canadian geological portrait painted in *Canada Rocks: The Geologic Journey*, a new book by Nick Eyles and Andrew Miall, Professors of Geology at the University of Toronto. Photographs, charts, maps, graphs, and sketches complement the authors' chronicle of the four billion years that gave shape to continents, mountains, and oceans and created the world's second largest country—Canada. The book explores our country's expanse, examining its history through modern-day sites and ancient land shapes, including

- Rocks in Point Pleasant Park in Halifax that once were part of Morocco
- Canada's Arctic regions that formerly joined what today is Siberia
- Greenland as a former part of Labrador
- Fossils in British Columbia's interior that lived in a sea covering China



An excellent reference for anyone fascinated with the geological forces that created our country, this resource also includes site locations to visit for close-up study.

Nick Eyles' previous books include *Ontario Rocks: Three Billion Years of Environmental Change* and *Toronto Rocks: the Geological Legacy of the Toronto Region*. Both Nick Eyles and Andrew Miall have written many leading scientific papers.

CBC Documentary:

Geologic Journey

Once upon a time, North America and Africa belonged to one super-continent, mountains towered above the Great Lakes region, and ice that was several kilometres thick blanketed much of the country. Hard to imagine? CBC now offers *Geologic Journey*, a five-part series that reveals the amazing geologic processes that occurred over 4.5 billion years to create Canada's modern-day land mass. The episodes travel through time to explore the Great Lakes, the Rockies, the Canadian Shield, the Appalachians, and the Atlantic Coast.

Inspired by hikes around the Niagara Escarpment, Michael Allder, executive producer of the Canadian documentary series *The Nature of Things with David Suzuki,* launched the four-year project that resulted in *Geologic Journey*. Shot in high definition, the five-part series blends science and visual techniques with personal stories from people fascinated by geology. Nick Eyles, Professor of Geology at the University of Toronto, is principal scientific advisor and narrator for the series.

The complete series is available on DVD in a two-disc collector's edition, including French language versions and special features not seen on television. A special learning edition, accompanied by a 60-page Teacher Resource Guide, complements high school curriculum. Earth science teachers at all levels can benefit from the learning opportunity afforded by this informative series.

For more information, go to www.cbc.ca/geologic

International Year of Planet Earth

In 2005, the General Assembly of the United Nations proclaimed 2008 as the International Year of Planet Earth (IYPE). IYPE celebrants will demonstrate ways in which Earth sciences can help future generations meet the challenges involved in ensuring a safer and more prosperous world.

Canada will be a major participant in the IYPE, in conjunction with the International Union of Geological Sciences (IUGS), the United Nations Educational, Scientific, and Cultural Organization (UNESCO), and more than 60 countries worldwide.

Visitors can hike along several scenic hiking trails by the spectacular Eramosa River, and for those not afraid to get dirty, guided cave crawls can be arranged. This challenging, yet unique experience allows explorers to glimpse beautiful stalactite columns and flowstone within the conservation's network of 12 caves. Another spectacular natural feature of the Rockwood Conservation Area that should not go unnoticed is "Devil's Well," the conservation area's largest pothole. At just over 13.1 metres deep and 6.4 metres wide, it could fit two city buses side-by-side at the bottom!

The Conservation Area also features historical and architectural attractions in the form of the preserved ruin of the old Harris Woollen Mill, a dam and millpond, and Old Valley Road. The Rockwood Conservation Area, open from May 1 to October 15, offers an idyllic location for recreational and learning opportunities only a short distance from major metropolitan areas. With so much to offer, it makes a great destination for all ages.

Please Note: *Caving poses inherent risks, and should not be attempted without park supervision. The park program is very safety oriented and all of the leaders are familiar with the caves and safety procedures.*

To arrange for a guided cave crawl for your class at the Rockwood Conservation Area please contact Valerie Fieldwebster, Senior Resource Interpreter at the Grand River Conservation Authority, at 519-240-1402.

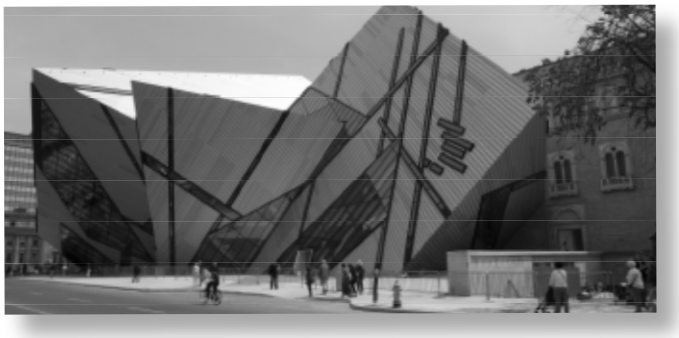
ROM Renaissance

If you're able to go to the Royal Ontario Museum (ROM) in Toronto, it's definitely worth the visit. The revitalized ROM promises to help convey the excitement of studying Earth science.

Officially opened in June 2007, the new Michael Lee-Chin Crystal, named after Portland Holdings Inc. Chairman Michael Lee-Chin in appreciation of his $30 million gift, presents a dynamic building design inspired by the museum's renowned gem and mineral collection. The five interlocking, self-supporting prismatic structures pierce the space around the older structure, challenging conventional ideas of architecture. Noted for its engineering complexity and innovative methods, the addition also underlines the use of mined building materials: roughly 3,500 tonnes of steel and 9,000 cubic metres of concrete went into the construction.

On the inside, a $10 million donation from Teck Cominco Limited is transforming the presentation of the ROM's extensive Earth science collection. This generous gift will establish the Teck Cominco Suite of Earth Sciences Galleries, the Teck Cominco Endowed Chair in Mineralogy and the Teck Cominco Digital Education Module in Earth Sciences, as well as create a new home for the Canadian Mining Hall of Fame at the museum.

"We will build three unique galleries within the Teck Cominco Suite, doubling the volume of ROM minerals and gems on display and opening up virtually limitless avenues for education," explained William Thorsell, the ROM's Director and CEO, in a press release earlier this year. "Our collections will be beautifully displayed in a restored space showcasing everything from precious gems to meteorites to spectacular crystalline gold. With this donation, we not only meet our objectives for Earth sciences but also expand our scope, establishing a great future for education and research through a new endowed chair, by digitizing our collection, and by bringing the history of Canadian mining to the museum." The galleries are due to open in 2008.



View from the northwest of the Michael Lee-Chin Crystal. Image courtesy of the Royal Ontario Museum © 2007

Aerial view of the Michael Lee-Chin Crystal. Image courtesy of the Royal Ontario Museum © 2007

In the meantime, teachers can take advantage of the ROM field trip sessions described below, designed to fit the Ontario Earth science curriculum.

Discover Science – Grades 4 to 8

Students learn stories behind the work of biologists, geologists, and palaeontologists as they examine our planet's history and its diversity of life.

Rocks and Minerals – Grade 4

Students investigate more than 50 rock and mineral specimens, identifying igneous, sedimentary, and metamorphic rocks, studying their characteristics and properties, and performing identification tests.

The Earth's Crust – Grade 7

Students investigate the composition of the Earth's crust and the forces shaping the evolution of our planet, focusing on the relationships between rocks and minerals, their properties, and classification.

For details, look at www.rom.on.ca/schools/index.php

Canada's resource extraction of major petroleum, coal, metal, mineral, and water resources accounts for the largest component of the national Gross Domestic Product (GDP). This ratio represents one of the highest among the industrialized nations. At the same time, Canada's Earth scientists demonstrate environmental stewardship, exploring and developing responsibly, and conducting leading edge research on geohazards, climate change, palaeontology, and other important Earth issues.

The Canadian National Committee's IYPE theme will be *WHERE on Earth? WHERE in Canada?* The acronym WHERE stands for Water, Hazards, Energy, Resources, and the Environment. Projects will feature these five key Earth science themes, directed towards three main goals.

- **Outreach:** Increase public awareness of the broad scope of Earth sciences, with special emphasis directed towards youth, encouraging them to consider pursuing a career in Earth science.
- **Industry Image:** Demonstrate that Canada's resource extraction industry follows clean, environmentally responsible practices. Plans include showcasing the high-tech nature of the industry, plus leading-edge environmental protection and remediation projects.
- **Geoscience Research:** Identify mechanisms for funding programs of research excellence in Earth science.

Further information about the International Year of Planet Earth can be found at these Web sites:

www.iypecanada.org/index.php

www.esfs.org/index.htm

www.iugs.org

Earth Learning Ideas

Take advantage of Earth-related teaching ideas offered every week during the International Year of Planet Earth, 2008. Using minimal resources, these ideas should help develop scientific understanding and thinking skills. Each one will encourage discussion through a blog to develop a global network of those interested in Earth science education.

To see how it works, go to www.earthlearningidea.com
Provide feedback on http://earthlearningidea.blogspot.com

To sign up or learn more, e-mail info@earthlearningidea.com

Junior Miner Winners 2007

Congratulations to all 2007 Junior Miner winners and thanks to all who entered the competition. The outstanding submissions presented judges with some difficult choices.

2007 Grade 4 Winners

Diamond Prize
Alysha Flindall—Articles
Roy H. Crosby Public School

Platinum Prize
Susan Wang and Emily Newman—Story
Cameron Street Public School

Gold Prize
Andy Hunter—Mind Map
Iroquois Public School

Silver Prize
Connor Richardson—Photo Collection
Murray Centennial Public School

Copper Prize
Laura Pen—Essay
Wilmington Elementary School

2007 Grade 7 Winners

Diamond Prize
Daniel Franco—Poem
Norseman Junior Middle School

Platinum Prize
Samuel Chin-Cheong, Sean Ziammit, Daniel Whyte, and Rohan Pansare—Poster
St. Dunstan Elementary School

Gold Prize
James Fortune—Essay
Norseman Junior Middle School

Silver Prize
Zamiul Haque—Essay
Queen Alexandra Middle School

Copper Prize
Jeyaram Naganathan—Essay
J. S. Woodsworth Senior Public School

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Mining Matters creates exceptional educational resources to meet provincial Earth science curriculum expectations. Since 1994, this charitable organization has reached more than 400,000 teachers and students through resources that promote awareness of the importance of rocks, minerals, metals, mining, and Canada's geology. *Mining Matters* prides itself on building long-term partnerships with teachers by providing relevant, accurate, and authentic Earth science resources for the classroom, designed by teachers for teachers.

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Mining Matters Teaching Resources

Units deliver curriculum expectations for Grade 4 and 7 topics related to Earth and Space Systems. Be sure to check out the *Mining Matters* Web site for more teaching kits and resource recommendations.

Grade 4: Deeper and Deeper

- 38 lesson plans and activities, student activity cards and quizzes
- Student exercise book master for easy photocopying
- Mineral testing equipment along with rock and mineral samples
- Maps, aerial photographs, erosion and site reclamation photographs, diagrams and a card game
- Additional resources such as posters and books

Grade 7: Mining Matters II – The Earth's Crust

- 35 lesson plans and activities with overhead transparencies
- Diagram masters for easy photocopying
- Mineral testing equipment along with rock and mineral samples
- Maps and fossil cards
- Additional resources such as videos, posters, and books

High School: Discovering Diamonds

- 21 lesson plans and hands-on activities
- Kimberlite sample and kimberlite indicator minerals
- Presentation with photographs of diamonds, geological field methods, glacial landscapes and Canada's diamond mines
- Data and fact sheets required for student activities
- Book: *Canada's Northern Diamonds…from rocks to riches*
- Publication: *What on Earth*
- Map: *Northern Canada Diamonds*
- Career Resources: *Explore for More*
- CDs: *Diamonds from the Tundra: The EKATI Story* and *Diavik: Constructing the Legacy*

In-Service Workshops

Mining Matters resource kits are available to Ontario teachers only through a two-hour workshop that may be hosted by a school board or teacher organization. Workshops are structured to accommodate up to 30 teachers and can be scheduled anywhere in Ontario with a minimum of four weeks' notice, subject to availability. The board's curriculum coordinator, its designate, or the teacher organization must handle all organizational details for the workshop. These include

- Confirming the date and location of the workshop
- Determining the number of teachers who will attend
- Handling all payments

Mining New Opportunities

The Ontario Mining Association (OMA) produced *Mining New Opportunities*, a video/DVD intended to help First Nations residents better understand the mineral industry, and its employment and entrepreneurial opportunities. Created by Big Soul, an Aboriginal TV production house, the video/DVD is produced in five languages: Cree, Oji-Cree, Ojibwa, English, and French. The *Teacher's Resource and Speaker's Guide* contains 13 learning activities designed to build on the themes in the video/DVD.

To access these resources go to the following Web sites:
Video/DVD: www.oma.on.ca/education/miningvideo.asp
Guide: www.oma.on.ca/education/teachersguide.asp