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Explorations in Science Culture 1995

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**Explorations
in Science Culture
1995**

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Industry Canada
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Introduction

Explorations in Science Culture 1995 describes and provides contacts for organizations and projects funded under the Science Culture Canada program in 1993 and 1994. Science Culture Canada funds products and activities that bring the excitement and potential of science and technology to Canadians, with a special focus on young people.

Explorations in Science Culture 1995 includes products and activities such as:

- events — the *Super expo-sciences Bell*, the *Canada-Wide Science Fair* and the *Festival international du film scientifique du Québec*
- magazines — *Nature Canada*, *Québec Science* and *Les Débrouillards*
- summer camps — Math Camp, Discover Engineering and the Youth Engineering & Science (YES) Camps
- plays — *Émilie*, *Isaac's Gift*, and *Dinosaurs and All That Rubbish*
- educational resources — Travelling ToolKits, Birdquest and the Labomobile de Muséobus
- exhibits — *Our Brain: Living Supercomputer* and *The Many Faces of Nature*
- educational films — *End of the World, Act 1* and *Saving the Bald Eagle*.

For More Information

Science Culture Canada is one of many science and technology promotion activities undertaken by Industry Canada, including SchoolNet, the SchoolNet Community Access Project, the Michael Smith Awards for Science Promotion, Computers for Schools, National Science and Technology Week, and the Prime Minister's Awards for Teaching Excellence in Science, Technology and Mathematics. Information on these activities and copies of *Explorations in Science Culture 1995* are available from the following address:

Science Promotion and Academic Affairs Branch
Industry and Science Policy Sector
Industry Canada
8th Floor, West Tower
235 Queen Street
OTTAWA, Ont.
K1A 0H5
Tel.: 1-800-268-6608

Electronic Access

Explorations in Science Culture 1995 and information on other Industry Canada science promotion programs are also available electronically on the Internet computer network. Anyone with Telnet or FTP access can obtain *Explorations* electronically.

Gopher Users

At the prompt, enter:

gopher schoolnet.carleton.ca

From the main menu, select number 6 Government Program Information, then number 1 Industry Canada and then number 5, Science Culture Canada. *Explorations in Science Culture 1995* is listed in the last menu.

For information on other federal science promotion programs, select Government Program Information from the main menu, then Industry Canada.

FTP Users

At the UNIX prompt, enter:

FTP schoolnet.carleton.ca

Log on as "anonymous," using your full E-mail address as a password. Under the pub directory, select the SchoolNet directory, then Canada.Sci-Culture. *Explorations in Science Culture 1995* is listed in the last menu.

Information on other federal science promotion programs may be accessed from the same list used to select *Explorations*.

Agence Science-Pressé

Since 1978, Agence Science-Pressé has been making science more accessible to the public. With its various publishing ventures (such as books, newspaper columns, activity folders and cartoon strips), it keeps Canadian Francophones up-to-date on the latest scientific discoveries and innovations.

Each week, 120 weekly newspapers, radio stations, and newsletters publish or broadcast science news from *Hebdo-Science* and *Hebdo-Science Radio*. These publications contain articles on current affairs in science from Canada and around the world. Agence Science-Pressé also publishes *Science Express*, a bimonthly newsletter for science teachers and their students.

Another Agence Science-Pressé publication is the lively children's magazine, *Les Débrouillards*, which cultivates a taste for science in thousands of readers from ages nine to 14 with cartoons, activities, stories and articles. The content is clearly tailored to the experience and interests of young readers, with articles on topics such as how CDs are manufactured, astronaut training and inline skating. Even general topics are made relevant to the target audience. An article on snow, for example, informed readers that during an average Montreal snowstorm, the number of snowflakes that fall on the city total 100 million billion. That's one followed by 17 zeros.

Since March 1995, Agence Science-Pressé also provides customized services to the media (articles for newspapers and magazines, scripts for television, etc.).

Contact:

Agence Science-Pressé
3995 St. Catherine Street East
MONTREAL, Que.
H1W 2G7
Tel.: (514) 522-1304
Fax: (514) 522-1761

Association canadienne- française pour l'avancement des sciences

Established in 1923, the Association canadienne-française pour l'avancement des sciences (ACFAS) links over 7 000 scientists with each other and with the general public. With representatives from Quebec, Ontario, the Prairies and the Atlantic region, ACFAS truly represents the Francophone science community across Canada. Its high-profile annual conference is the largest multidisciplinary gathering of Francophone scientists in the world. At each conference, over 3 500 participants share the most recent results of their research and studies.

Interface, a bimonthly journal distributed across Canada, demystifies research and reflects on its social, economic, political and cultural consequences. Stories range from the conventional to the unusual — couples in all stages of a relationship, secrets of how the memory functions, child fashions of the 18th century and the greenhouse effect. ACFAS also publishes a summer issue that lists more than 1 300 research organizations, which is an invaluable resource to the Francophone scientific community.

ACFAS also honours excellence in Canada's research and teaching community. Cash prizes and medals are awarded for both public and private sector work in seven areas, including technological innovation, natural and health sciences, social sciences, environmental sciences and interdisciplinary studies.

ACFAS plays an active role in promoting research as well as science and technology through annual science promotion competitions, science exercise books, youth conferences and the *Quinzaine des sciences*, Quebec's science and technology week. ACFAS, in collaboration with Science Culture Canada, brought the *Intelligent House* to the Complexe Desjardins for the 1994 *Quinzaine*. This display allowed people to see technology in action — in this case, a house managed by automated devices. In the future, such houses will allow physically challenged people to buy groceries over the computer, adjust lighting levels with a mere command and have robots do housework.

Contact:

Association canadienne-française pour l'avancement
des sciences
425 de la Gauchetière Street East
MONTREAL, Que.
H2L 2M7
Tel.: (514) 849-0045
Fax: (514) 849-5558

Association for the Promotion and Advancement of Science Education

Since 1984, the Association for the Promotion and Advancement of Science Education (APASE) has helped teachers, parents, scientists and other role models teach science and technology to children in elementary schools. Lasting partnerships are forged between businesses, research centres and schools.

Workshops such as *Engineering for Children* and *Inventions* teach problem-solving and simple scientific and engineering principles. In *Triangles and Stability*, students use straws and pins to build two-dimensional shapes, and learn that triangles are the most stable structure. The *Science for Everybody* workshop offers hands-on science activities designed to appeal equally to boys and girls. Students clean up a miniature oil spill, explore symmetry and three-dimensional shapes by constructing paper jewellery and learn about the experimental process with live mealworms.

APASE also reaches audiences through new communications media, such as Internet and interactive television. *ScienceTracks*, an on-line activity kit for schools and homes launched in 1994, guides students in building a high-capacity model cargo barge out of aluminum foil and toothpicks, and in designing and constructing top-notch paper airplane gliders. The newsletters *Diverse* and *WebDiverse* (on-line) examine current issues such as gender inequities in the sciences and applying interactive technology.

Equitable education is a principal theme in all APASE programs. A new book titled *Unmixed Messages — Strategies for Equitable Science Education* and a related on-line support service provide practical strategies for encouraging girls in science. In 1994, APASE undertook the direction of the Sierra Club's *Multicultural Environmental Outreach Program*, and now runs a series of workshops for English-as-a-Second-Language audiences with themes such as recycling, air quality and health, and the environment.

All APASE programs and publications show the relevance of science and technology to daily life, and portray scientists and engineers as interesting and approachable people.

Contact:

Association for the Promotion and Advancement
of Science Education
Suite 200, 1111 Homer Street
VANCOUVER, B.C.
V6B 2Y1
Tel.: (604) 687-8712
Fax: (604) 687-8715
Internet: susimmon@cln.etc.bc.ca

Atlantic Provinces Council on the Sciences

The Atlantic Provinces Council on the Sciences (APICS) offers a variety of activities to stimulate public interest in science. Annual events such as conferences and lectures by scientists cover a great spectrum of science topics from physics to aquaculture.

A science education conference for secondary school science teachers, held every three to four years, updates teachers on exciting areas opening in science, presents current and future directions in science education, and promotes better communication among science teachers at all levels.

In response to a need identified at a 1991 colloquium on science literacy, APICS established an annual *Media Challenge* workshop for high school and university students. Participants hear presentations from scientists on their work and receive instruction on bringing science to the general public. The next step is interviewing the scientists, writing articles and producing video news stories, which are judged by real journalists.

Outstanding science teachers at both the secondary, college and university levels are honoured by the APICS/Power Utilities Science Teacher Award. Medals and certificates are also awarded annually by APICS to over 150 students for projects receiving honourable mention at regional science fairs.

APICS has produced a directory of scientific expertise in the Atlantic region. Distributed to small businesses, it lists scientists working in various fields of research at universities and government labs who will provide them with scientific information, free of charge. Every high school in the Atlantic provinces receives *Atlantic Science*, a newsletter that highlights science stories and personalities in the region. Regular features include "A Lab of Her Own," which profiles female scientists and their work, and a calendar of science-related community events.

Contact:

Atlantic Provinces Council on the Sciences
Memorial University of Newfoundland
P.O. Box 4200
ST. JOHN'S, Nfld.
A1C 5S7
Tel.: (709) 737-8918
Fax: (709) 737-4569
Internet: jatkinson@kane.ucs.mun.ca

Canadian Centre for Creative Technology

The Canadian Centre for Creative Technology has earned widespread recognition for the Shad Valley summer program, its unique business-education partnership. The award-winning program offers secondary school students valuable insight into science and its relationship to the business world.

Top grade 11 and 12 science students and first-year CÉGEP students, selected jointly by the centre along with business and government sponsors, spend four weeks at one of eight university campuses. This is followed by a one-month work term with one of the sponsoring firms. In total, 400 students from across Canada are selected.

Students live on campus and spend seven days a week attending lectures on mathematics, entrepreneurship, computing and technology, as well as taking part in workshops that cover topics such as jazz improvisation, digital electronics, product design, power plants and symbolic logic. The program also combines engineering and entrepreneurship through team projects. Teams think up new products, design and build prototypes, research the market, write business plans, and present their work to a panel of experts at an open house. The panels include business and science professors as well as local entrepreneurs.

Contact:

Canadian Centre for Creative Technology
8 Young Street East
WATERLOO, Ont.
N2J 2L3
Tel.: (519) 884-8844
Fax: (519) 884-8191
Internet: info@ccct.uwaterloo.ca (filename ccct)

Canadian Nature Federation

The Canadian Nature Federation promotes understanding, awareness and enjoyment of nature, as well as the conservation of the natural environment, so that natural ecosystems are maintained. To educate the adult naturalists of today and the young naturalists of tomorrow, the federation offers:

- *Birdquest* — a kit that helps adults teach young people skills from identifying birds to conducting independent studies on conservation or bird biology. Participants progress through six badge levels, from chickadee to falcon, each increasing their proficiency to identify birds, understand their biology and behaviours, and implement conservation programs.
- *EPIC (Endangered Plants and Invertebrates in Canada)* — a program to identify and protect plant and invertebrate species that are endangered, and re-establish those that have dwindled in Canada.
- *Ancient Forest Detectives* — a group that increases understanding of old-growth forest biodiversity among youth and young adults.
- *Nature Canada* — a magazine that keeps Canadians abreast of scientific discoveries, theories and issues related to natural sciences and the impact of human activities on these ecosystems.

Whether recruiting volunteers to map old-growth forest stands in Temagami, Ontario, or teaching children how to identify a rose-breasted grosbeak, the federation ensures that the message of environmental preservation is proclaimed loud and clear across the country.

Contact:

Canadian Nature Federation
Suite 520, 1 Nicholas Street
OTTAWA, Ont.
K1N 7B7
Tel.: (613) 562-3447
Fax: (613) 562-3371
Internet: 72233.3536@compuserve.com

Canadian Science Writers' Association

The Canadian Science Writers' Association operates national science writing workshops that bring together scientists, students and journalists. In each day-long workshop, students produce science stories for print, radio or television. Stories are based on presentations from guest scientists and are produced with the help of science journalists. The best stories produced by the students are printed or broadcast by local media. These workshops, which are held each year in Ottawa, Calgary, Toronto and Vancouver, promote youth interest in science and technology, as well as improve communications between scientists and the general public.

The association promotes public understanding of science issues and the role of the press through monthly public panel discussions in Calgary and Toronto, as well as an annual conference, which is held in a different city each year. The panel discussions have addressed topics such as palliative care and euthanasia, ethics and biotechnology, AIDS reporting, and the science of science fiction. The conference offers public forums with an emphasis on local science and technology developments as well as educational workshops on getting science and technology messages out to the general public. Conference themes have included the information highway and ethical issues in scientific research.

The Science in Society Journalism Awards recognize the best in the profession in print, radio and TV each year. In 1995, two new awards will be offered: one to honour the author of the best science book in Canada and the other to honour the author of the best science book for children in Canada. A total of \$12 000 in prize money is available.

Other activities include a display at Toronto's *Word on the Street*, an annual book and magazine fair, and occasional workshops on environmental issues.

Contact:

Canadian Science Writers' Association
Suite 1111, 40 Alexander Street
TORONTO, Ont.
M4Y 1B5
Tel.: (416) 928-9624
Fax: (416) 960-0528
Internet: avisser@io.org

Canadian Society for Chemistry

The Canadian Society for Chemistry promotes a positive image of chemistry in their bilingual secondary school newsmagazine *Discover Canadian Chemistry* and by holding National Chemistry Week.

By covering chemical success stories, exciting new chemical discoveries and contributions made by Canadian chemists, chemical engineers and chemical technologists, *Discover Canadian Chemistry* highlights the rewards and benefits that chemistry gives to the world. It portrays the human side of science and illustrates the various applications of chemistry and the diversity of chemical fields. A four-member committee, with representatives from universities, industry and high schools, ensures that the newsmagazine is current and suitable for the audience. This eight- to 12-page newsmagazine is sent directly to every English and French high school in Canada.

National Chemistry Week was launched in 1989, and since then has been organized and sponsored by the Canadian Society for Chemistry. This promotional week works in conjunction with National Science and Technology Week.

Contact:

Canadian Society for Chemistry
Suite 550, 130 Slater Street
OTTAWA, Ont.
K1P 6E2
Tel.: (613) 232-6252
Fax: (613) 232-5862
Internet: cscxt@acadvm1.uottawa.ca

Conseil de développement du loisir scientifique

With the goal of promoting science as a leisure activity, the Conseil de développement du loisir scientifique awakens young minds to the wonders and possibilities of science. In over 25 years, the conseil, supported by a network of nine regional offices in Quebec (regional councils), has surpassed all its expectations with regard to the success of its initiatives.

Each year, top contenders in the 12 regional science fairs throughout Quebec compete at the *Super expo-sciences Bell*, Quebec's annual science fair, which brings together the best of the over 11 000 people who participate in science fairs across the province. Students from ages 12 to 20 present their experiments or displays to the general public. Winners advance to national and international science fairs, where they broaden their cultural horizons and advance their knowledge of science.

To strengthen teens' interest in science, the conseil supports science clubs across Quebec, which feature the motto *Fous de la science* (Crazy about Science). A resource kit includes a guide for club facilitators and theme-based activity books. Launched at the end of 1993, *Fous de la science* has been a breakthrough success in Quebec schools.

The Club des débrouillards offers a diverse range of activities suited to the elementary school level including mobile activities, workshops, laboratories, day camps, Journée nationale des débrouillards and *Les Débrouillards*, a science magazine. The club's accomplishments were honoured by Industry Canada with a Michael Smith Award for Science Promotion in 1994.

Effective activities and a desire to stay at the leading edge of scientific developments and the interest of young people help the conseil keep science accessible and develop a science culture in Quebec and for Francophones outside Quebec.

Contact:

Conseil de développement du loisir scientifique
4545 Pierre-de-Coubertin Avenue
P.O. Box 1000, Station M
MONTREAL, Que.
H1V 3R2
Tel.: (514) 252-3027
Fax: (514) 252-3152

Discovery Centre

Discovery Centre, Nova Scotia's only hands-on science centre, brings science to life with changing exhibits, hands-on science workshops, and presentations by local scientists. From forecasting the weather to searching for treasure, visitors explore the principles of science while having fun. Through self-guided discovery, they link science and technology with everyday life.

A non-profit charitable organization, Discovery Centre is located in a shopping mall and office complex and includes a permanent collection of chemistry exhibits, math and logic puzzles and *Bubbleworks*, a popular hands-on exhibit on surface tension. For young children, the Room for Small Wonders provides a safe, creative environment for learning through play.

In December 1994, Discovery Centre opened *Satellites, Watchdogs and Cool Heat: New Eyes and Ears on the World*. This major exhibit on remote sensing includes a weather satellite, an ultrasonic motion detector, stereo maps and an underwater microphone. It attempts to familiarize the visitor with remote sensing in a playful and interactive way. This exhibit also highlights some of the technologies used and produced by industry and major research institutes in Atlantic Canada.

Three life-size puzzles illustrating the skeleton, major muscle groups and internal organs make up the interactive *Bits & Bones* exhibit. The exhibit is a fun and easy way for children from ages four to 10 to learn what their bodies are made of and how they work.

Discovery Centre takes hands-on science beyond Halifax through its travelling exhibits program. In 1994-95 school year, a collection of the most popular travelling exhibits titled *Science Spectrum* is visiting seven Nova Scotia communities.

Discovery, the centre's newsletter, lists workshops, lectures and other events.

Contact:

Discovery Centre
Upper Level, Scotia Square
5201 Duke Street
HALIFAX, N.S.
B3J 1N9
Tel.: (902) 492-4422
Fax: (902) 492-3170
Internet: discover@ac.dal.ca

Festival international du film scientifique du Québec

Since 1990, the best science and technology films from Canada and around the world have been featured each September at the Festival international du film scientifique du Québec. In 1994, the festival screened 70 films from 15 countries. The festival is based in Montreal and Quebec City, with 20 to 30 mini-festivals in smaller communities across the province and is aimed at students. Films are screened in schools for elementary, secondary and CÉGEP students.

Due to a strong demand for the films, the festival has created a video library that can be accessed year-round. As of early 1995, the collection consisted of approximately 200 titles. A catalogue outlines the subject, language and length of each film.

Three films from the 1994 festival provide some idea of the wide range of subjects in the collection:

- A French film, *l'Océan Décrypté*, features the use of satellites in oceanography and climatology. It includes two- and three-dimensional modelling of average wave heights and fluctuations in ocean tides, using data transmitted by the Topex Poseidon satellite.
- A Canadian film, *Deadly Deposits* is an animated detective story with a macabre twist. Two doctors, working in an autopsy lab, investigate the cause of death of a man whose body was found in his apartment. A debate ensues as to whether the victim died of environmental causes.
- A German film, *Crash 2030*, journeys through time to a climatic Armageddon. This science-fiction film examines our present-day environment from a future perspective, and how this coming catastrophe can be averted by acting now.

Contact:

Festival international du film scientifique du Québec
15 de la Commune Street West
MONTREAL, Que.
H2Y 2C6
Tel.: (514) 849-1612
Fax: (514) 982-0064

Nomad Scientists

The Nomad Scientists are a national group of science educators dedicated to revealing the wonders of the natural and physical sciences. True to their name, they travel the country, exciting imaginations and helping to make science fun. But make no mistake — they are *no mad* scientists!

The Nomads introduce youth, primarily children from ages four to seven, to science, acting as "curiosity catalysts" in homes, schools and the community. Their work takes them from isolated fishing villages to large urban centres.

Popular programs range from science theatre performances at the preschool level to natural and physical science demonstrations at the elementary and secondary school levels. In addition, the Nomads offer workshops and resource materials to help parents introduce science to their children.

Services are offered in both English and French.

Contact:

Nomad Scientists
Suite WG-204, 2480 West Broadway Street
MONTREAL, Que.
H4B 2A5
Tel.: In Quebec: (514) 684-6055 (English)
(514) 739-7602 (French)
Outside Quebec: 1-800-265-6055
Fax: (514) 739-7808
Internet: nosci@web.apc.org

PARTNERS

PARTNERS involves local businesses, educational institutions and governments in creating positive student attitudes towards mathematics, science and technology. Programs are geared toward students, teachers, and science and technology professionals.

Destiny 2000 is a week-long science, engineering and technology exposition that introduces grade 9 students to real-world applications of science, engineering and technology. In 1994, students who visited *Destiny 2000* had opportunities such as building a three-dimensional computer model, manipulating a robotic arm with a video camera and experimenting with a silicon graphics machine used to create special effects in movies. Exhibitors from high-tech companies, universities, colleges, government labs and professional associations are encouraged to provide students with hands-on experience and to work with grade 9 science teachers in planning their displays.

A week-long science camp for students from grades 4 to 6 combines science with fun. Activities at the *Science-Fun Summer Program* include building model rockets and using dye analysis to identify counterfeit bills. Teachers, engineers and scientists work together on developing activities. Following field testing at the camp, the ideas are incorporated in kits used in schools and at the National Museum of Science and Technology.

In addition to developing their own skills, teachers learn more about what will be required of students entering the job market through the *Teacher Summer Internship Program*. PARTNERS provides them with two- to five-week placements with local business and government where activities have included research, writing manuals and creating software.

Other PARTNERS initiatives include: running the Ottawa-Carleton Partnership Awards of Excellence, which recognize successful business/education partnerships; co-ordinating the local *Innovators in the Schools* program, which brings volunteer scientists and engineers into classrooms; and co-ordinating the Ottawa-Carleton Association of Partners-in-Education, which nurtures the development and maintenance of partnerships through an annual workshop and other year-round activities; and publishing a newsletter.

Contact:

PARTNERS
4th Floor, 340 March Road
KANATA, Ont.
K2K 2E4
Tel.: (613) 591-1285
Fax: (613) 591-1609
Internet: wnoble@ocri.ca

Science Manitoba

Science Manitoba is a new nonprofit association of local science organizations, educators and the high-tech community, committed to promoting science and technology through a regular program of public events that focus on children. Activities provide a bridge between the science community and the education system. They also promote networking between Manitoba's science and technology community and the general public.

Manitoba is home to an array of impressive scientific experts and research and development facilities, yet the average Manitoban knows little about them. Science Manitoba stimulates public awareness of science and the local scientific community in an entertaining and educational way.

In May 1994, 15 000 people visited *Sci-Trek*, a giant public science exposition staged in the Winnipeg Convention Centre for three days. Schoolchildren visited during the day on Thursday and Friday, while families and the general public were welcomed during the evenings and on Saturday.

The event, which is scheduled to be held every two years, showcases an assortment of science exhibits by the local technology community. Exhibits at the first *Sci-Trek* allowed visitors to measure the electrical current in their bodies, connect working electrical circuits, test drinking water, make voice prints and see insects give birth. A chemical magic show featured activities such as growing crystals, pyrotechnics and turning liquids instantly to solids. Other demonstrations and performances involved fun with forces, good vibrations (sound) and a balance and gravity feature that explained just how tightrope walkers stay upright.

Science Manitoba also plays a role in organizing local events during National Science and Technology Week. In 1994, these events included a breakfast to launch the week featuring the federal Secretary of State (Science, Research and Development), Manitoba Children's Museum exhibits at The Forks, special displays at the Manitoba Museum of Man and Nature and several public lectures. These lectures addressed the issue of women in science, how to encourage young women to pursue science careers and what parents can do to increase their children's interest in math and science.

Contact:

Science Manitoba
351 Taché Avenue
WINNIPEG, Man.
R2H 2A6
Tel.: (204) 235-3100
Fax: (204) 231-1918

Société pour la promotion des sciences et de la technologie

A pioneer in the promotion of science culture in Canada, the Société pour la promotion des sciences et de la technologie has organized high-profile public awareness activities such as the annual Quebec-wide science festival, the *Quinzaine des sciences*, since the early 1980s.

The *Quinzaine* helps thousands of people learn more about science through activities such as touring a water treatment plant, visiting an R-2000 house, measuring the technological IQ of an intelligent house, learning how to prepare plants for winter and seeing a solar-powered car. The theme of the 1994 *Quinzaine* was "Science, Technology and Habitats," which encompassed subjects such as energy, materials, natural habitats and the impact of technologies on human habitations. The société's partners include educational institutions, research organizations, industry and government.

In 1994, the société offered an international symposium on science culture. As part of the symposium, the société presented "Journey to the Heart of Science," a collection of six Canadian and international expositions and more than 15 displays by their public and private sector partners.

The société is especially dedicated to developing alliances between industries and schools, with such projects as a science information hotline and Chef de file, the Quebec component of Industry Canada's *Innovators in the Schools* network. Chef de file brings professionals and post-secondary students in science and related disciplines to classrooms, science clubs, science fairs and other activities.

Omni Science is a series of pamphlets that complement the television program of the same name. The series uncovers the mysteries behind the brain, the ocean, space and many other vast concepts in science.

Contact:

Société pour la promotion des sciences
et de la technologie
Room 808, 417 Saint-Pierre Street
MONTREAL, Que.
H2Y 2K4
Tel.: (514) 873-1544
Fax: (514) 873-9257
Internet: louise@spst.login.qc.ca

Youth Engineering & Science (YES) Camps of Canada

Youth Engineering & Science (YES) Camps' mission is to stimulate enthusiasm and an appreciation for science, engineering and technology among Canadian youth, fostering a new, technologically literate generation. As winners of one of Industry Canada's 1994 Michael Smith Awards for Science Promotion, the YES member camps have earned recognition for excellence and innovation. The 19 member camps expect to reach over 75 000 young Canadians in 1995. Thanks to a national bursary program offered by TransCanada Pipelines, underprivileged children are among those attending. Other national sponsors include Bell-Northern Research, Northern Telecom, Xerox, Celestica and Hewlett-Packard.

The youthful energy that has made YES Camps such a success comes from the science and engineering undergrads who run each camp. Member camps share a common model and objective, but camp co-ordinators develop unique activities. Each co-ordinator is accountable to a university advisor.

The focus of YES Camps is to provide fun hands-on activities, positive role models and practical experience in a broad range of science and engineering topics. The following projects were recipients of the 1994 Xerox Best Project Awards:

- Computer Networks — Campers navigate network maps on a giant tarpaulin, simulating packets of information being transferred.
- Mickey Mouse Cars — Campers use string and elastics to power a vehicle, learning principles of potential and kinetic energy.
- Planetariums — Participants construct geodesic domes of paper mâché and then map the summer sky using glow-in-the-dark stars.

As of 1995, the following universities are YES Camps members:

- Adventures in Engineering and Science — University of Ottawa
- Creative Encounters with Science — University of Guelph.
- Discover E — University of Alberta
- Discovery Western — University of Western Ontario
- Engineering & Science Venture — McMaster University
- Engineering Science Quest — University of Waterloo
- Folie Technique — École Polytechnique
- Future SET — Memorial University of Newfoundland
- REACH — McGill and Concordia Universities
- Science Alive! — Simon Fraser University
- Science Aventure Jeunesse — Université du Québec à Chicoutimi
- Science et Contes — Université Laval
- Science Discovery — Queen's University
- Sci-Fi — University of Saskatchewan
- Science Outreach — University of Toronto
- Science Quest — Queen's University
- Science Venture — University of Victoria
- Worlds Unbound — University of New Brunswick.

Contact:

YES Camps
c/o Canadian Math Society
575 King Edward Avenue
P.O. Box 450, Station A
OTTAWA, Ont.
K1N 6N5
Tel.: (613) 564-3202
Fax: (613) 564-9567
Internet: YESCAMPS@acadvm1.uottawa.ca

Youth Science Foundation Canada

The Youth Science Foundation Canada is a national charitable organization providing leadership and youth programs in extra-curricular science and technology education. Its mission is to stimulate an interest in science and technology among young Canadians and to encourage them to pursue related career opportunities.

The foundation is best known for the annual *Canada-Wide Science Fair*, which brings together top competitors from across Canada. Science fair participants in Canada number approximately 500 000 at the classroom level, 20 000 at the more than 100 regional fairs affiliated with the foundation and 400 at the *Canada-Wide Science Fair*. In 1995, another 30 students will join Team Canada – Science to compete against their peers from around the world. High school and university students in the *Young Scientists of Canada* program gather on weekends to explore science from a recreational perspective. A network of 8 000 dedicated volunteers organize foundation activities in communities from coast to coast.

Each year, the foundation provides science fair winners, poster contest entrants and Young Scientists members with more than \$200 000 worth of prizes, including international travel, scholarships, cash awards and summer employment.

The foundation also distributes publications, science fair participation certificates, buttons and stickers.

Contact:

Youth Science Foundation Canada
Suite 904, 151 Slater Street
OTTAWA, Ont.
K1P 5H3
Tel.: (613) 238-1671
Fax: (613) 238-1677

Yukon Science Institute

The Yukon Science Institute, formed in 1985, is a non-profit organization dedicated to promoting scientific activity in the Yukon. Through a variety of programs, the institute seeks to expand interest in science among Yukoners and to foster scientific awareness and education.

The public awareness program of the Yukon Science Institute has four components. Once a month during the winter, the *Major Lecture Series* brings a scientist from outside the Yukon to give a public lecture. In addition to speaking in Whitehorse, the lecturer is often asked to give presentations at schools and neighbouring communities. In 1993–94, these public lectures attracted audiences as large as 100 people to hear about Frobisher's gold-mining exploits in the Arctic, liquid mercury telescopes, Beluga whales, the northern lights and other topics. Another series of lectures is under way for 1994–95.

The *Lunch-time Seminar Series* invites local scientists to speak at an informal public lecture with lively discussions between the speaker and the audience. In conjunction with the *Major Lecture Series* and the *Lunch-time Seminar Series*, interviews are recorded at the local CBC station for broadcast on the *Something Scientific* radio series. *Something Scientific* airs at least twice a week in a lunch-time slot. The institute also produces a biannual newsletter, which is distributed to institute members, media outlets and other interested parties. The newsletter discusses the activities of the Yukon Science Institute and announces upcoming scientific conferences and events.

The Yukon Science Institute also sponsors the annual *Yukon Regional Science Fair* in Whitehorse. Interest in the event is steadily increasing across northern British Columbia and the Yukon. In 1995, the institute hosted the *Canada-Wide Science Fair*, which brought students from across the country to Whitehorse.

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A Good Job for a Woman

A Good Job for a Woman is an ongoing video series for girls aged eight to 17 featuring three new episodes profiling women in non-traditional careers.

Agriculture follows the lives and careers of a cranberry farmer, an economist, a food technologist, an agronomist (soil specialist), a landscape architect and an animal scientist.

In *Mathematics*, female mathematicians are shown teaching, doing math in mall presentations and using their skills to come up with innovative solutions to real-world problems involving massive structures such as geodesic domes.

Maritime Careers looks at a variety of occupations at sea, spotlighting oceanographers, a ferryboat captain, marine architects, a wave specialist, a Coast Guard instructor and apprentices in boilermaking and sheet metal working.

Each 25-minute episode encourages female students to pursue careers in science and technology. Two previous episodes, *Engineers* and *Aviation*, have also been produced.

A Good Job for a Woman will be broadcast nationally on television and used in schools, libraries, employment centres and other public institutions across Canada.

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As If People Mattered: Women and the Creation of a New Science

What does it mean to think like a woman when doing science? Do women really ask different questions and focus on different issues and areas of research? What methods or values would distinguish their approach from present science and technology? What impact will the increasing participation of women have on science? *As If People Mattered: Women and the Creation of a New Science*, a one-hour documentary film, addresses these and other questions.

The film, with a projected release date of summer 1996, suggests that a new generation of female scientists is creating a new science that emphasizes connections and commonalities more than detachment, neutrality and objectivity. This new science examines all things within a broad environmental, social and ethical context, and the women who support it are social critics of current applications and results of science and technology as much as they are scientists.

Scheduled for TV broadcast and non-theatrical distribution, the target audiences are high school and university students, as well as the public at large.

From fibre optic images of the human body to archival footage from the 1950s and 1960s celebrating the unlimited promise of modern science, *As If People Mattered* explores the past, present and future of women in science. It shows young women that they have a place in the history and practice of science, that they can practise science in a way that is consistent with their own values, and that the aims and approach of science, as it is currently practised, are open to challenge and change.

Contact:

Artemis Films Inc.
448 Grosvenor Street
WESTMOUNT, Que.
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Tel.: (514) 935-2643
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Dinosaurs and All That Rubbish

Dinosaurs and All That Rubbish is a musical play by David Wood featuring a wealthy, unhappy man who depletes the earth's resources in order to build himself a rocket to explore distant planets. When he returns to earth, dissatisfied with his wanderings, he finds to his surprise that the dinosaurs have returned! Along with the wildlife that has flourished in his absence, they teach him that technology has to benefit all life forms, not just human beings.

Based on the book of the same name by Michael Foreman, *Dinosaurs and All That Rubbish* has elementary school audiences participate, playing vital roles such as the solar system and the dinosaurs, as well as joining in for the musical finale. Active involvement in the show helps to reinforce the message that we live on a planet of limited resources, where all things are interdependent.

An accompanying teacher resource guide features activities that help make children aware of the value and wonder of the natural world, the problems facing the environment today, and the role they can play as responsible global citizens.

During its 1993 tour of south central Ontario, 30 600 students from kindergarten to grade 3 enjoyed the show. In 1994, *Dinosaurs and All That Rubbish* won a Dora Award for Outstanding Play for Young Audiences.

Contact:

Carousel Players
P.O. Box 23013, Midtown P.O.
ST. CATHARINES, Ont.
L2R 7P6
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Earth Observation Theatre Programming

If hell ever *did* freeze over permanently, it would join the cryosphere, regions where the earth's surface is always frozen. *The Cryosphere: World of Ice* is a 20-minute, multimedia presentation spotlighting these chilly areas. The presentation shows how ice in snow, glaciers, the sea and elsewhere is important to the planet and to climate change. Using state-of-the-art computer graphics technology and satellite data, some of which is from Manitoba, images are projected onto a full-wall screen in the 80-seat theatre.

A second presentation is open-ended, interactive and warmer. A central control panel in the theatre allows the facilitator or members of the audience to select topics related to the hydrosphere (water), atmosphere (air), lithosphere (rock) and the biosphere (life). Details can be accessed based on the audience's level of understanding and interest. The presentation looks at "sphere scenarios" at the local, regional and global levels. For example, the presentation related to the hydrosphere shows the effect of hydro development on South Indian Lake in northern Manitoba (local), the effect of El Niño, a warm current in the Pacific Ocean (regional), and the transfer of heat from the sea to the air (global).

Each scenario incorporates and illustrates a variety of earth sensing techniques — aerial, shuttle and remote-sensing satellite photography, as well as thematic maps. Computer graphics and animation illustrate topics such as ozone destruction, ecosystems of the world and continental drift.

Condensed and modified presentations of *The Cryosphere: World of Ice* have been developed for use with students. *Living Links* (grades 7 to 9) and *Sustainable Living* (grades 10 to 12) programs address ecosystems and eco-friendly lifestyles. *Cool Crystals*, an adaptation of the interactive presentation, is geared towards grades 4 to 6 students.

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Émilie et l'été de toutes les histoires and A Present from Isaac

What could be farther apart than ancient fossils, stars that are light years away and the daily concerns of a nine year-old? The Théâtre Le petit Chaplin pulls them together in an entertaining fashion with plays that link the abstract concepts of science with everyday events that children from ages six to 12 can identify with — families, friends and neighbourhoods.

Émilie et l'été de toutes les histoires, currently available in French only, tackles paleontology, the history of prehistoric life on earth based on the study of fossils. It draws a parallel between the main character's search to find her biological family and the origin of life on earth. With the help of a young woman of African descent who is studying paleontology and who becomes her mentor, Émilie discovers not only her family origins, but also her origins as a member of the human race.

A Present from Isaac, an English adaptation of a hit French play, links cosmic changes like the life and death of stars with the very real upheavals in the life of a young girl. Katou has recently moved to a new neighbourhood. Feeling isolated and alone, she is befriended by a young astronomist named Isaac who is building a model solar system in his backyard. As Katou learns more about the planets and the stars, she comes to realize that change itself, as well as feelings of being new and different, are natural.

A Present from Isaac is scheduled for 60 showings in Ontario between October 1995 and December 1996, with a target audience of 35 000 students in Ontario.

Contact:

Théâtre Le petit Chaplin
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End of the World, Act I

Sixty-five million years ago, dinosaurs, more than half of all marine life and over one third of all vegetation were wiped off the face of the earth. This event made way for the creation of new ecological niches and the appearance of new species. As humans, we are among the fortunate offshoots. *End of the World, Act I* is a documentary film that retraces this momentous event of long ago and follows the steps of present-day scientists as they uncover its mysteries.

The film supports the theory that a 300 km-wide crater in Yucatán, Mexico, is evidence of a comet, 10 km in diameter, whose impact left the planet covered in a cloud of dust and subject to alternating waves of extreme cold and intense heat. It features Canadians Dale Russell, a paleontologist, and geophysicist Alan Hildebrand, who have shed new light on this ecological crisis marking the end of the Cretaceous period.

Filmed in Yucatán, Alberta's Badlands, the United States and Haiti, *End of the World, Act I* encompasses such diverse fields as geology, astrophysics, paleontology, climatology and geophysics. Experts from around the world gather the pieces of evidence that lead to the theory of the crater's origins. Animated segments recreate the meteor theory catastrophe.

End of the World, Act I addresses not only the extinction of the dinosaurs, but also evolution as a whole and the future of the human race.

The film, which is being produced in English and French, should be completed by fall 1995. It is scheduled for broadcast on national TV and subsequent distribution through other channels.

Contact:

Productions IMPEX Inc.
480 Ste-Marie Street
LAC-AUX-SABLES, Que.
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Energy Choices

Performances of original songs by Canadian pop group Moxy Früvous, animation and live action footage combine to make *Energy Choices* a lively, refreshing look at energy technology and its impact on the environment. The production also examines measures to minimize this impact, primarily by increasing the efficiency with which we use energy and by turning to cleaner, renewable sources of energy. A companion piece to *The Science of Energy*, this 43-minute video covers the history of energy technology, including ancient waterwheels and windmills, development of the steam engine in the 18th century, and the modern era of electricity, oil and the internal combustion engine.

Highlighting Canada's status as the world's greatest energy user per capita, *Energy Choices* surveys the pros and cons of our current sources of energy, none of which are environmentally benign. After posing the dilemma of the effect of increasing energy use on the environment, the video looks into the best current solution — energy efficiency. For instance, it highlights compact fluorescent lighting, a new technology whose twisted tubes are five times more energy efficient and 10 times longer-lasting than regular, incandescent bulbs. *Energy Choices* also explores the longer term solution of alternative, sustainable sources of energy. The film, aimed at high school students across the country, inspires both students and teachers to think about their own role in energy consumption and conservation, giving them the knowledge required to play an informed role in the continuing public debate on energy issues.

Energy Choices is accompanied by a comprehensive 80-page teacher's guide produced in association with the Energy Educators of Ontario. The guide is available in English and will be offered in French.

Contact:

MediCinema Ltd.
131 Albany Avenue
TORONTO, Ont.
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Fax: (416) 977-0569

Expédition Pôle Sud

Antarctica is not only the coldest place in the world, but also the cleanest. Even germs don't thrive there. It is the land furthest from civilization, the last continent to be explored, and a giant freezer, containing 98 percent of the world's freshwater ice. Drafts of cold air, snow and ice crystals running along a slope of ice can reach 300 km an hour.

Expédition Pôle Sud is sending a two-man scientific expedition to the South Pole in November 1995. Upon their return, the expedition will be captured in text, photos, video and sound on CD-ROM, due out in March 1996. The CD-ROM will be available in both English and French, and will target secondary- and university-level students. In addition to the expedition, the CD-ROM will cover topics such as the history, geography and discovery of Antarctica, the six types of ice found there (sea ice, ice caps, glaciers, ice shelves, icebergs and table ice), cold acclimatization, glaciology, nutrition, satellite imaging and communications.

The expedition will require the two participants to travel for seven to nine hours each day on cross-country skis, pulling 145 kg of food and equipment in pulkas (sleds), covering 1 500 km in 65 days. Each pulka will contain a Global Positioning System, which will locate the expedition's exact position via satellite, and a distress beacon for security.

Contact:

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The Living Beach

Beaches are almost like living creatures: they grow, they die, they are fed, they can starve, and they react to stress. An ambiguous zone, they belong as much to the ocean as to the land. *The Living Beach* is a 48-minute film, in which scientists both in labs and the field show how beaches function and how we can learn about them. Others — including surfers, developers, regulators and residents — discuss the living beach from their own perspective.

People want beaches to be stable. Stability, however, is contrary to their nature. As sea levels rise, beaches roll backwards. In North Carolina, towns have been buried by beach dunes moving inland. On Long Island, storms cut new inlets in barrier islands, dumping homes and highways into the sea. In Nova Scotia, drumlin capes can retreat 20 feet in a single storm.

Beaches are destroyed when people try to "save" them from their own dynamics. Their constant flux and change clashes with the human longing for permanence. On the one hand, they are exploited for commercial purposes; on the other, they play a large role in art, film and literature. *The Living Beach's* vivid footage covers the entire Atlantic seaboard between the Magdalen Islands and Miami, including a wide range of different beach formations, and shows how lack of knowledge and carelessness can destroy human lives, property and the beach itself.

Broadcasters include national and Atlantic TV networks. The program is also being distributed to educational markets in Canada, the United States and the United Kingdom.

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Fax: (902) 798-5766

Safari '94: The Barkley Sound Expedition

From April 18–23, 1994, *Safari '94: The Barkley Sound Expedition* took students from around the world to view the creatures of the deep, ancient Aboriginal villages, rugged west coast terrain, and the treetop perches of eagles, all via video and telephone carried on a fibre optic communications network. The 24 one-hour, live, interactive television programs overcame the physical and geographic challenges of the Pacific coastal environment to deliver high-quality educational programming across the country.

Communication among the mobile teams, remote dive stations, and scientific staff aboard the research vessel was an ongoing technical challenge that was met. It was truly an adventure in innovation.

The natural resources of the area provided a magnificent setting. Though the five exploration sites covered a 40 km radius, Safari '94 extended into theatres and classrooms thousands of kilometres away. From as far away as Sweden, Japan and Australia, students shared the Safari '94 experience, sending over 400 questions a day to the scientists and receiving replies via the Internet, modems and satellites, and through the fibre optic network across North America.

Safari '94 also provided a splendid opportunity for positive role-modelling as divers and scientists demonstrated their own fascination and joy in exploring the undersea realms.

By using technology to show kids what can't normally be seen under the water and elsewhere, Safari '94 put some fun into science.

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Saving the Bald Eagle

Americans need only look for a quarter in their pocket for a picture of the bald eagle, a common icon in their culture associated with wilderness and power. But a documentary film titled *Saving the Bald Eagle* shows how a sparse eagle population in Massachusetts is being restored with the help of Canadian naturalists.

In all of North America, there are only two major bald eagle mating populations east of the Rocky Mountains. One is in Florida, the other on Cape Breton Island in Nova Scotia. During the 1960s and 1970s, eagle populations in Massachusetts were wiped out by pesticides and human interference. However, Cape Breton's eagle population remained stable. From 1984–88, the Nova Scotia Department of Natural Resources worked with American wildlife officials to transport several eaglets from Cape Breton to Massachusetts. Today, there are several pairs of breeding eagles in Massachusetts.

Since eagles are at the top of the food chain, they can be useful to naturalists, biologists and other scientists as environmental indicators.

The film, which is scheduled to be completed by January 1996, is slated for TV broadcast and educational use in high schools.

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University College of Cape Breton
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The Space Journals

The activities that place Canada in the forefront of space science and technology, as well as the people behind them, are featured in documentary films *CAPSULES: Seven Days Inside* and *Finding the Right Stuff*, two documentary films in *The Space Journals* series. The films bring scientists, astronauts and other players in space closer to the general public, providing a clearer understanding of the links between their work and our daily lives.

CAPSULES: Seven Days Inside highlights four astronauts participating in a simulated space shuttle mission. Placed in a sealed isolation chamber for a week, they carry out experiments and tasks prepared by a team of international scientists. This 15-minute film is used by the Canadian Space Agency for presentations to students and the general public.

Finding the Right Stuff profiles Canada's astronauts and their requirements and training in an hour-long episode. Training emphasizes discipline, efficiency and flexibility. Astronauts must be able to take on the roles such as pilot, scientist, team worker and doctor, for the duration of their flight.

Whereas early space missions emphasized exploring the unknown, current missions focus on science. *Finding the Right Stuff* follows Canadian astronauts from pilot training at the Barrie Flight Centre in Ontario to space flight preparations at the Kennedy Space Center in Florida, where they conduct experiments in communications and medicine. Once aboard the space shuttle, they carry out experiments in fluid dynamics and material sciences; changes are measured in body rhythms, balance disturbances and optical illusions.

Teamwork is becoming more and more important as the missions get longer. Missions and simulations also provide opportunities to study group behaviour in isolated and confined quarters — individual mood changes, the effects of heavy work demands, and how people cope with stress. Computer games are used to test changes in basic skills like memory, intellect and attention. All astronauts must make quick decisions and perform well under pressure.

The Space Journals, which has been broadcast on television, is also available on video.

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TV Ontario
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Internet: online@tvo.org

To the Moon with Sharon, Lois and Bram

Stars, stars and more stars! Earthly stars Sharon, Lois and Bram sing about the stars in the sky to make astronomy come alive in a planetarium show for children from ages three to seven. Vancouver, Calgary, Edmonton, Winnipeg and Toronto are among the cities hosting this interstellar musical journey of discovery.

To the Moon is a fantastic voyage through space where children accompany Sharon, Lois and Bram in their search for their missing friend Elephant. Accompanying laser animation and special effects make the learning more fun.

The main objective of the show is to introduce children to the wonders and potential of astronomy, space science and the universe. Having these well-known singers and performers as star teachers makes it easier to capture the children's attention.

As of late 1994, Sharon, Lois and Bram sold 2.7 million recordings in North America since their first release in 1978. *The Elephant Show* is seen daily in over 58 million North American households.

Contact:

Pacific Space Centre Society
H.R. MacMillan Planetarium
and Gordon M. Southam Observatory
1100 Chestnut Street
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Tel.: (604) 738-7827
Fax: (604) 736-5665
Internet: groundstation@pacific.space.centre.bc.ca

What's the Big Idea?

What's the Big Idea? is an intriguing new children's game show pilot about inventors, inventions and inventiveness for children ages eight to 12. Its about science, technology and, most importantly, involving the audience in both traditional and non-traditional thinking patterns.

Each program in the series centres on two teams of two players each competing at a video game board, where clues help them identify mystery inventions from all cultures, races, genders and eras. One clue leading to the invention of the roller coaster in a pilot program is a scream, suggested by a film clip from *The Potato That Mashed New York*, in which someone appears to scream but the sound effect is removed. Another clue is the word car, suggested by a rap song with references to Henry Ford and the Model T.

The show also features a film clip of children who have won the Big-Idea Award for their innovative inventions, like glow-in-the-dark seatbelts that are easier to find at night, and remote-control vacuum cleaners that will clean your room while you watch TV. A resident rap group and Elvis contribute to an atmosphere that is fun, as well as educational.

The often simple origins of many famous inventions are explained, and the contestants and viewers are encouraged to work on improving an existing invention themselves. *What's the Big Idea?* shows its young audience that science is fun, relevant to every aspect of their lives, and very important to their future. By introducing children to the heroes of the world of science and technology and their ideas, the show helps them envision future opportunities for themselves.

PBS has shown strong interest in broadcasting the show, beginning in Autumn 1995.

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Aboriginal Science Camp

Traditional Mi'kmaq science and culture blend with mainstream science at the Aboriginal Science Camp. Traditional stories introduce Mi'kmaq youth participants to each topic before they conduct related experiments.

For example, before participants learn about identifying minerals, rock formations and structures, they hear the "Tunka-shila" (Grandfather Rock) story. This is followed by examination of traditional stone artifacts such as arrowheads, knives, soapstone lamps and axes, and identification of the type of rock from which they are made. The properties that make the rock suitable for different kinds of tools are also discussed.

A segment on health and healing addresses scientific principles of pharmacology, plant identification, health sciences and nutrition before participants take a field trip to identify and collect medicinal plants. While the participants prepare a plant for medicinal use, an elder addresses spirituality and safety. Participants also learn about some common, modern drugs and the Mi'kmaq medicinal knowledge from which they are derived. A discussion of Mi'kmaq health issues closes the session.

The weather observation component of the camp has participants construct their own weather instruments from everyday materials such as pop bottles, cork, feathers and balloons. After they use these instruments to monitor weather conditions, results are compared with scientific instruments at a local weather station.

Other topics explored at the camp include sound, local energy sources and fish.

Contact:

Mi'kmaq Education Authority
115 Membertou Street
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Fax: (902) 567-0337

Biotechnologies Residential Camp

The Biotechnologies Residential Camp provides an intensive two-week session, where approximately 35 Francophone students from ages 13 to 17 learn the importance of science and technology as tools for major economic development. The camp features courses covering such topics as cells, nucleic acids, protein synthesis and basic biotechnology.

Students perform experiments in biotechnology on in-vitro cultures of plant cells, isolating DNA and studying enzymes. One experiment of the student's choice is presented to fellow participants in a competition at the end of the session. Students link their courses with the real world through field trips to sites such as a soil research centre, a seedbed centre and an observatory. Campers are encouraged to build on their experience by competing in science fairs and by sharing their enthusiasm for science with friends and families.

Contact:

Collège de Rivière-du-Loup
80 Frontenac Street
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Dinosaur Country Science Camps

Have you ever wanted to dig for dinosaur bones? Construct your own beaver dam? Eight Dinosaur Country Science Camps introduce children from ages nine to 17 to the work of field scientists in the natural ecozones (badlands, prairie and river flats) of the Drumheller, Alberta, region. The themes of ecology, history, paleontology, technology, archaeology and agriculture are explored in hands-on sessions that allow students to work alongside the experts.

To learn about fossils and how they are modified by the elements, campers go hiking in the badlands, find fossils, clean them for identification and draw conclusions from them. Studying the anatomy of a modern bird skeleton, along with a cast of a small dinosaur fossil, campers look for similarities and differences between the two. They are also encouraged to speculate on the skeletal adaptations that would have to take place for one species to evolve into the other.

Campers visit a modern agricultural co-op where computers are used to keep track of crop records, finances and machinery. They also visit a Hutterite community that takes a deliberately low-tech approach to activities such as ice-cream-making.

Campers are also introduced to the endangered Prairie ecosystem and its wide variety of vegetation. They learn how the unique prairie vegetation developed because of its location within the rain shadow of the Rocky Mountains, how glaciers have influenced the geography of the area, and how fires and bison herds have affected the plant life. Participants identify individual prairie plants, comparing those in mowed and grazed grasslands with those of virgin prairie. In doing so, they learn about prairie management and the importance of conservation. In three laboratories inside the dormitory, students clean their fossils, sort micro-fossils using microscopes, and press plants they have collected.

A 10-day Science Adventure Camp for teenagers incorporates a three-day canoe trip with archaeology or paleontology, and some ecology. Parents and children can participate in camp activities together during a special family camp held on the August Civic holiday weekend.

Contact:

Drumheller Regional Science Council
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Discover Engineering

Encouraging news is gradually emerging about the increased number of women entering engineering studies. Between 1990 and 1992, the percentage of women engineering students at Canadian universities jumped from 12 to 18 percent. At Ryerson Polytechnic University, the percentage of women in first-year chemical engineering increased from 36 percent in 1992 to 46 percent in 1994.

These increased percentages are at least partly due to recruiting campaigns and a change in attitude toward women in engineering. Creating new mind sets is what the Discover Engineering camp is all about.

The target audience for the project is young women who have completed grade 11, with priority given to more senior students. In 1995, 120 students, mostly from the Metropolitan Toronto area, will attend. Participants take on projects in five engineering disciplines: aeronautical, chemical, civil, electrical and mechanical. The camp emphasizes hands-on experience through projects such as producing holograms with a neon-helium laser, building a pneumatic controller, analyzing micro-organisms in water and making polymers.

As one participant said: "All activities were well planned, educational and lots of fun...We truly benefited, because there is no way that our school would provide all of this."

Contact:

Women in Engineering Committee
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350 Victoria Street
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Tel.: (416) 979-5000, ext. 6354
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École de la Mer

Les Jeunes Explos has offered natural science classes to Quebec youth since 1954. Classes conducted by the sea have been offered since 1990, where studies include field work in a marine environment, either by an estuary or by the Gulf of the St. Lawrence River.

Biologists, oceanographers and engineers teach students about the flora and fauna at selected study sites from mid-May to mid-October each year. As of spring 1994, almost 1 200 students had participated.

The program consists of site explorations, group consultations, lab sessions and video presentations. Teams of five or six students, led by a naturalist, visit sites to observe and record geological, biological, geographical and ecological characteristics. Samples of wildlife and plants are examined in the lab, and the teams write reports on observed phenomena and conclusions. Activities include daily summaries of site visits as well as microscopic analysis and anatomical identification of samples.

With their hands-on approach and wealth of professional natural scientists, Les Jeunes Explos stimulate children's innate desire to explore and discover, creating an innovative program in an appealing outdoor setting.

Contact:

Les Jeunes Explos
50 des Cascades Avenue
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Tel.: (418) 660-0099
Fax: (418) 661-4778

Engineering Science Quest

Just what is toothpaste made of anyway? Grade 4 and 5 participants in classroom workshops offered by engineering students at the University of Waterloo not only find out, but also make their own toothpaste. The workshops, held during May and June in the Kitchener-Waterloo-Cambridge region, begin with an introduction to what scientists and engineers really do. Afterwards, students take part in hands-on activities related to topics such as water filtration and electroplating.

Week-long day camp sessions run during July and August for students in grades 5 to 8. The program includes making soap and plastic, paper recycling, a chemistry and crime activity, as well as laboratory and museum tours. Another activity has campers devise original inventions or improve an existing product, with presentations to their peers and families during an Invention Convention at the end of the week. Examples of participants' invention ideas include conveyor belts to carry vehicles along roads and a lightbulb powered by fruit juice rather than batteries.

Teams of participants take part in science Olympics on the last day of camp. In one event, teams must create containers that will keep a raw egg placed inside from breaking when dropped from the roof of a one-storey building. They have only five to 10 minutes to complete the event and are provided only with packing materials such as straw, tissue paper and tape. Another event has campers run through an obstacle course. In order to complete the course, they must answer questions related to science concepts covered during the week.

A Counsellor-in-Training program brings local female students from grades 11 to 13 to work as a camp instructor for one session.

Engineering Science Quest is now a member of the YES Camps network. See page 9.

Contact:

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Internet: esq@helix.watstar.uwaterloo.ca

Future Scientists, Engineers and Technologists

Because science and technology create the jobs of tomorrow, quality science and math education is important for Newfoundland students.

Through workshops in the schools and summer camps for children in grades 4 to 8, Future SET (Scientists, Engineers and Technologists) encourages further studies and careers in science-related areas. Future SET makes a special effort to attract girls and children who lack an enthusiasm for science.

Activities are based on those developed by Youth Engineering and Science (YES) Camps, a network of university-based, student-run camps across Canada. Children complete projects in civil, mechanical, electrical and ocean engineering in addition to learning about physics, chemistry, biology and geology. Activities include using the Internet to send electronic mail, launching rockets and using fingerprinting, handwriting analysis and chemistry to solve a murder mystery. Students are encouraged to bring home examples of their work to interest family members in their activities.

In 1994, 143 children attended seven week-long camps in St. John's, and almost 1 000 more viewed classroom presentations. For 1995, Future SET plans to add four camps in Corner Brook and two in Labrador City.

Future SET is now a member of the YES Camps network. See page 9.

Contact:

Future Scientists, Engineers and Technologists
c/o Association of Professional Engineers
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Math Camp

Mathematics is the backbone of many sciences. The study of most branches of science is impossible without an understanding of mathematics. Since the Black community is poorly represented in science, Dalhousie University has created Math Camp, with a purpose to identify and encourage math talent among Black children.

Approximately 40 Black junior high school students from across the province come to the Dalhousie University campus to participate. Instructors are drawn from Dalhousie, Acadia University and the public school system. Topics are chosen from various areas of mathematics and are related to an overall theme. In 1993 and 1994, the theme was "Visualization and Communication." One popular activity related to that theme was a computer simulation game where participants use math to plan, design and run a city.

Math Camp complements The Council of Nova Scotia University Presidents' campaign to recruit Black and Micmac students into professional programs.

Contact:

Math Camp
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Ndakenjigewin Gbeshwin Science and Engineering Camp

Building a telescope. Witnessing a smudging ceremony. One is scientific, the other a Native cultural event. The Ndakenjigewin Gbeshwin Science and Engineering Camp combines these different worlds for students in grades 4, 5 and 6. The week-long camp for North Shore First Nations students takes place each year in August.

Students enjoy hands-on science activities in which they learn about their natural environment. Daily themes such as astronomy, forestry and the environment provide a framework for science-related projects. Students learn about the stars and constellations in a portable planetarium, create their own telescopes, and form space work crews to complete a simulated mission to another planet.

Other science activities include panning for gold, identifying minerals, and planting pine seedlings on Forestry Day. Forestry experts discuss species identification, age, height, and width reporting, as well as why trees are important to the earth. By the end of this section, students have a good idea of what responsibilities a forestry career entails. A representative from a local career centre provides students with information on making responsible career choices.

Along with the science-related activities, students learn about their cultural heritage from elders. For example, in the astronomy section, participants learn about native symbols associated with the stars: the serpent, the bear, Grandfathers and the Path of Life, to name only a few. In the northern Ontario animal section, students learn how native people have achieved a peaceful balance with nature. Cultural activities include making a medicine wheel and a dream catcher.

Contact:

North Shore Tribal Council
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Fax: (705) 356-1090

Science ALIVE!

A revolution is taking place at Simon Fraser University in British Columbia, where students are also teachers. Students from the undergraduate Science and Applied Science faculties instruct the younger generation through the Science ALIVE! program.

To achieve their goal of making science exciting for students from grades 5 to 8, Science ALIVE! offers a three-tiered approach:

- an on-campus science camp consisting of university tours and challenging building projects. One such project has students construct a sandbox garbage dump to demonstrate how pollutants can leak down and contaminate drinking water. Another has them make Rube Goldberg machines, which requires finding the most complex and fun way to accomplish a simple task. Brain Bumpers (science trivia questions) challenge campers to think creatively.
- workshops in elementary school classrooms, where Science ALIVE! staff present interactive, two-hour demonstrations.
- an on-campus science camp for elementary school teachers who share ideas and learn about Science ALIVE!'s innovative teaching techniques. Teachers leave with a ready-to-teach package to take back to their own classrooms.

Activities such as cleaning up mock oil spills and studies on topics such as solar-powered cars increase the student's awareness of environmental responsibility. The camp recycles and uses environmentally friendly materials as much as possible.

Bursaries are available to financially disadvantaged children, and a minimum 40 percent of campers are female. Almost 200 participants are expected in 1995.

Science ALIVE! is now a member of the YES Camps network. See page 9.

Contact:

Science ALIVE!
Engineering Undergraduate Student Society
School of Engineering Science
Simon Fraser University
BURNABY, B. C.
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Internet: yescamps@sfu.ca

Tundra Science Camp

When most people think about the Northwest Territories, they probably envision igloos, snow, polar bears and more snow. However, just like anywhere else, this area has its own thriving ecosystem. The Tundra Science Camp shows students how diverse the tundra habitat is and the scientific wonders going on around them.

The 10-day residential camp involves 12 high school students and three teachers in the North Slave Region of the Northwest Territories. They spend one day at the Northwest Territories Centre for Remote Sensing and nine days at the Tundra Ecological Research Station, located on the Coppermine River, 300 km north of Yellowknife. The camp emphasizes field techniques and research processes in remote sensing, wildlife ecology, aquatic systems, botany and geomorphology. It also relates them to environmental impact assessment and resource decision-making. Dene elders relate traditional knowledge of the land to the search for understanding through science.

In addition to conducting team research projects of their own design, participants help on-site researchers, thereby learning more about their work in solar energy, waste disposal and bear-deterrent technologies.

Contact:

Yellowknife Catholic Schools
P.O. Box 1830
Yellowknife, N.W.T.
X1A 2P4
Tel.: (403) 873-2200
Fax: (403) 873-2701

Classes de la mer sur la Côte-Nord du Saint-Laurent

We use water for so many things: washing our hands, cleaning our clothes, watering our plants, and quenching our thirst. And yet, how many people who live by the sea are aware of the startling variety of coastal organisms and other aquatic life forms? Eider enr. is an organization dedicated to teaching about the mysterious life of the sea.

Elementary students spend from one to three days at Classes de la mer sur la Côte-Nord du Saint-Laurent exploring the ecology of their coastal environment through a number of different activities in these classes about the sea. Biologists and naturalists introduce children in grades 1 to 6 to the scientific method, using field trips to shorefront areas and peat bogs where students can observe and identify marine species ranging from plankton to whales.

The staff teach students about topics such as geography and marine mammals, and the students work co-operatively to find and examine local flora and fauna. Being out on the site makes the students appreciate and understand the importance of conservation. Working in this natural laboratory not only provides students with hands-on lessons in biology, but also gives them a better knowledge and appreciation of their unique environment.

Eider focusses on learning while having fun. This focus allows participants to discover the ecological diversity of the Gulf of the St. Lawrence and its shores and understand its value.

Contact:

Eider enr.
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HAVRE-SAINT-PIERRE, Que.
G0G 1P0
Tel.: (418) 538-3942
Fax: (418) 538-3942

Environmental Challenge

Students from five high schools across Saskatchewan completed months of research to answer the 1994 Environmental Challenge: Designing a Sustainable Agricultural System. After investigating agricultural conditions in their region, students developed ways to modify or solve local problems, ultimately designing their own sustainable agricultural system for the area. Presentations of 10 to 20 minutes incorporated slide shows, skits and videos to elaborate on issues such as changes made to the natural ecosystem by the development of modern agriculture in their area of the province; the natural capability, or physical potential, of the land in that area for agriculture; who else, besides farmers uses the land, and if these uses are valid; and whether or not their sustainable agricultural system designs are economically feasible.

The presentations, given at the Saskatchewan Soil Conservation Association's Annual Meeting and Workshop, were judged by a panel of agrologists, educators and farmers. Each participating school also designed and presented a three-dimensional model of its own sustainable farm for an audience of farmers, ranchers, conservation and agricultural organizations, and the general public.

Contact:

The Saskatchewan Soil Conservation Association
38 – 5th Avenue North
YORKTON, Sask.
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Tel.: (306) 786-1526
Fax: (306) 786-1511

Frogwatch '95

Just as canaries were once used by miners to detect toxic gases, other animals can act as environmental safety alarms or, more scientifically, as biomonitors. One such creature is the tree frog, an amphibian whose life cycle can be linked to temperature and with the health of an ecosystem. Frogwatch '95, a type of frog census, will help to resolve the debate over whether frog populations are dwindling in Nova Scotia.

As part of Frogwatch '95, students, youth groups and families across Nova Scotia observe and monitor the Northern Spring Peeper, a local tree frog about the size of a quarter. Participants fill out forms that keep track of where and when they hear the first peep, as well as the first chorus of peeps. Data is reported via a 1-800 number to a central office. Computer-generated maps at The Nova Scotia Museum of Natural History highlight Peeper locations and participants can see the concrete results of their efforts once-a-week on television weather reports.

The *Frogwatch Workbook* offers information to students on frogs and their relation to the environment. It explains how the species can be used to measure environmental quality, outlines the life cycle of the Northern Spring Peeper, explores their breeding and hibernation practices, and provides instructions and safety tips for watching frogs at night. Among the frog facts sprinkled throughout is the bizarre phenomenon of Peepers freezing solid like popsicles during the winter and then waking up to peep about it in the spring. The workbook also contains a "Froglog" to keep track of observations, suggestions for further activities and a reading list for more information.

Another phase of the Frogwatch '95 project has participants conducting freshwater habitat surveys. They gather such data as species distribution, habitat change, freshwater pH levels, and water and air temperatures. Since these data will be available to scientists through the collections at The Nova Scotia Museum of Natural History, the scientific approach is emphasized.

Three organizations are co-ordinating Frogwatch '95: The Nova Scotia Museum of Natural History, The Clean Nova Scotia Foundation and Envirosphere Consultants Ltd.

Contact:

The Clean Nova Scotia Foundation
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Fax: (902) 424-5334
Internet: can-nsm2@immedia.ca

Labomobile de Muséobus

Usually, a bus takes a student to school. With Labomobile de Muséobus, the bus *is* the school. Muséobus (Radis inc.) has converted a school bus to create Labomobile, a mobile laboratory that travels to schools, as well as community centres, libraries and museums. Students from ages nine to 13 who go on the bus learn about the scientific method as they conduct their experiments.

Muséobus is developing modules on water and earth to complement a module on air. In our universe, everything that surrounds us is interconnected: animals, plants, the earth below our feet and the sky above our heads. Organisms are affected by each other, as well as by earth, air and water. The goal of these modules is to teach students how these inert elements are essential to living things.

Modules feature guidebooks to help teachers prepare students to visit Labomobile, as well as illustrated workbooks. Instructions for more than 60 easy experiments on water and earth are being designed. The experiments deal with the diverse biological, chemical and physical properties of earth and water. Each experiment shows either the properties of the element, or the effect it has on human beings. Students work in teams, just as many scientists do.

Other modules that have been offered by Muséobus include meteorology, communications, physics, botany, chemistry and milk production techniques.

Contact:

Muséobus (Radis inc.)
760 des Patriotes Road
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J3H 1Z5
Tel.: (514) 464-0201
Fax: (514) 446-4644

Meteorologists in the Schools

We all hear weather reports, yet few of us understand much about meteorology, a very useful science. The Association of Professional Meteorologists of Quebec offers a *Meteorologists in the Schools* program to stimulate interest in the subject, especially among 11 to 15 year-olds.

In 1994-95, meteorologists are visiting 30 schools a month, with an average audience of 30 students each. Their objective is to reach 9 000 students by the end of the tour. Students will have the opportunity to examine radar maps, learn how to recognize fronts moving in, how to locate their own community on a weather map and how to predict what the weather will be like for the next day.

Each one hour visit includes a discussion, demonstration and exercise. Meteorologists also distribute a booklet that addresses atmospheric pressure, wind, clouds, weather stations, climatology, air masses and snow. Crossword puzzles, word searches and an experiment to build a mini-weather add a hands-on element and some fun.

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Association of Professional Meteorologists of Quebec
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Tel.: (418) 644-3483
Fax: (418) 643-9591

P.E.I. Women Do Math and Science Conference

Many young girls need to be shown the options open to them by continuing their studies in math and science. That is the reason behind P.E.I. Women Do Math and Science, a one-day conference attended by grade 8 girls, their parents, professional women in science and math-related jobs, and female post-secondary math and science students. The conference includes a prominent guest speaker and two workshops, one for young girls, the other for their parents. Each girls' workshop leader discusses her career and presents a hands-on activity.

Workshops for parents are led by guidance counsellors, representatives of Human Resources Development Canada, and the Student Aid Office of the P.E.I. Department of Education. They discuss opportunities for Canada's youth, ways for parents to support their children's choices and financial aid available for post-secondary education.

Contact:

Steering Committee for P.E.I.
P.E.I. Women Do Math and Science
84 Great George Street
CHARLOTTETOWN, P.E.I.
C1A 4K4
Tel.: (902) 368-4513
Fax: (902) 368-4516

Science on the Move

The world of exciting, varied careers in science and technology is brought home to junior high school girls in Alberta by *Science on the Move*, a travelling collection of resource materials accompanied by successful Canadian female scientists. Visiting schools in rural Alberta and on Aboriginal reserves, *Science on the Move* offers career posters, videos and hands-on science activity kits to schools and communities. A local female scientist is on hand at each destination to provide information and answer questions about her own career, as well as to elaborate on the resource materials provided.

Information is also distributed on prerequisites for university and college entrance in science-related disciplines, courses in different degree programs, types of jobs open to people with different science degrees, and a variety of science programs, such as work terms and courses in university labs, available to young female students.

Science on the Move not only increases girls' interest in science, but also elevates the understanding of women in science in communities not often given the chance to meet any female scientist role models.

Contact:

Alberta Women's Science Network
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CALGARY, Alta.
T2M 3X7
Tel.: (403) 231-6759
Fax: (403) 282-6805
Internet: jeffegi@cadvision.com

Science, on tourne!

A vast reservoir of creativity and ingenuity lies within our educational institutions. With *Science, on tourne!*, the Fédération des CÉGEPs draws upon this reservoir, transforming science into a truly entertaining activity.

Science, on tourne! provides junior college students from across Quebec with a humorous challenge that requires them to apply principles of chemistry, biology and physics. The problem set out for the 1993–94 competition was inspired by the ancient pyramids of Egypt. These great mountains of rock are sources of immense gravitational energy. It is believed that the ancient Egyptians possessed a technology that permitted them to use the stockpiled gravitational energy in the massive stones. To prove that this technology truly existed, teams were asked to create a gravitationally propelled vehicle that can cover 15 metres in the shortest time possible.

In the 1993–94 challenge, more than 50 CÉGEPs took part, each with 10–15 students competing as individuals or in teams. The competition has been so successful that it may spread to Francophone communities in Belgium.

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ScienceWeb

ScienceWeb is a science and technology information service for the information highway that focuses on Canadian activities. It makes use of public domain software known as NCSA Mosaic, Netscape and Lynx, which provide access to multimedia information in Macintosh, PC and XWindows environments through easy-to-use hyperlinks to remote sites.

The goal is to present the spectrum of science and technology activities in Canada, highlighting occupations and individuals along the way. ScienceWeb is simple and fun to use, even for children, some of whom will be familiar with an interactive, multimedia approach through video games. As a broadly based, current source of Canadian science and technology information, ScienceWeb is a kind of electronic encyclopedia and newspaper.

Features of ScienceWeb include on-line tours, interactive lessons such as dissecting a virtual frog, teacher's corner, news, contests, a random search capability, as well as questions and answers. An on-line mentoring project is being designed with Lester B. Pearson College of the Pacific to have their international students collaborate on science projects with Canadian children via ScienceWeb.

ScienceWeb information sources range from government labs to private companies and non-profit societies. Older students are encouraged to gather information on relevant organizations in their community so that students across Canada can access it on ScienceWeb.

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V8X 4B2
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Tel.: (604) 363-0012 (voice mail)
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Les Scientifines

According to 1992 statistics from Quebec's former Ministère de l'Enseignement supérieur et de la Science, 77 percent of female CÉGEP students major in Arts, while only 17 percent major in technical studies. In a world increasingly dependent on technology, skills in science and related areas are important. Les Scientifines is taking steps to make sure that girls from an economically disadvantaged area of Montreal do not get left behind.

The group offers free after-school science sessions for nine to 12 year-old girls. Activities are drawn from the fields of chemistry, physics, biology, mathematics and computer science. Participants are encouraged to ask questions and become active learners. Experiments and projects such as building a mini-computer and dissecting a fish really make science come alive. During the year, an exhibit showcases the projects the girls have completed.

Once a month, women speakers come in to talk about non-traditional careers for women, or the participants go on a field trip. On a trip to the Canadian Automobile Association, they watched an engine being taken apart and a complete tune-up being carried out.

Les Scientifines is opening the doors of possibility to future engineers, astronauts and chemists.

Contact:

Les Scientifines
2450 Workman Street
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Tel.: (514) 938-3576
Fax: (514) 872-4583

Travelling ToolKits

Travelling ToolKits allow students from grades 4 through 9 in rural and northern areas of Saskatchewan to connect the science concepts they learn in school to jobs and industries in their communities. Hands-on science activities presented in the kits involve the use of authentic tools and instruments. Print resources and storybooks included in the ToolKits complement the hands-on activities.

The Forests and Forestry kit contains equipment that forestry workers use on a regular basis, including increment borers for taking core samples from trees, clinometers for measuring their height, diameter tapes, tree callipers, soil sampling equipment, and field guides for identification. Just like real scientists, students analyze, measure and test core samples from a variety of trees to determine environmental factors affecting the tree's growth rate. Students then suggest ways of increasing the trees' longevity. Other ToolKits being developed will involve testing for water pollution and panning for gold.

Since ToolKit themes are drawn from local industries and professions, teachers are able to make good use of connections with local professionals. Students learn that science is a tool used by many people not considered to be scientists, including farmers, city planners, foresters, miners, doctors and business people. Through the Travelling ToolKits, children see that science can be interesting, practical and accessible to everybody.

Contact:

Saskatchewan Science Centre
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REGINA, Sask.
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Fax: (306) 525-0194

Wandering Star Comprehensive Community Outreach Program

Imagine designing the first village on an alien planet like Mars. How do you produce food, water and air? What do you do with waste? What about transportation and communication? And how do you keep the colonists from getting bored? Students in British Columbia participating in *Marsville — The Cosmic Village* work on these problems and others to create models of systems that would let them survive on Mars. Classes come together on Link-Up Day to construct their habitats, show off their systems, and evaluate and critique each other's work.

Touching the Future is a day-long space science workshop for teachers, built around a flight in a space shuttle. A wide range of up-to-date teaching techniques are featured, along with demonstrations of multigrade classroom science activities and distribution of teaching materials such as videos, slides and workbooks with a space science theme.

Community Astronomy, a travelling program, visits parks throughout British Columbia, introducing people to the wonders of the cosmos. Canada's largest portable telescope used for public programming, nicknamed Big Bird, is used to observe the moon, planets and deep-sky objects. A brief slide show sets the stage for the observing session, where participants are provided with hints on using telescopes to view nebulae and galaxies.

Large enough to seat 30 students but small enough to be set up in a school library, *Starlab* is a portable planetarium able to produce over 3 000 stars, the sun, the moon and some planets. It can simulate the night sky for any time, season or location in the Northern hemisphere, as well as show the earth's continents and plate tectonics. Designed to show students that astronomy and science are both accessible and interesting, *Starlab* enables them to study and discuss celestial motions, skies visible in different parts of the world, and modern cosmology, among many other subjects.

Space is a valuable teaching tool — not just for science, but to increase the community's comfort level with our technological society. The magic of space can be the catalyst to teach computer, math, engineering, team-building and communications skills. The Space Resource Centre gives teachers and the general public access to materials to help them do this. Electronic, print and visual materials are available for reproduction and distribution at cost. An on-line database is accessible to the public via Internet.

Contact:

Pacific Space Centre Society
1100 Chestnut Street
VANCOUVER, B.C.
Tel.: (604) 736-4431
Fax: (604) 736-5665

The ABC's of Biodiversity

The ABC's of Biodiversity is a primer to be published soon for high school teachers and students, nature and science organizations, and community groups. It will combine elements of evolutionary biology, ecology and systematics with applied biology, public policy and conservation biology as it explores current issues in biodiversity. Interrelationships in ecosystems, litter decomposition, natural extinctions versus human-influenced extinctions, and natural catastrophes such as insect infestations will be introduced and explained. Threats to biodiversity such as habitat loss and fragmentation, atmospheric change, human population and consumption, and pollution in the form of pesticides and herbicides will be presented and discussed. Consequences of the loss of biodiversity and examples of what is being done to preserve it will round off the primer, to be published in English and French.

A resource directory accompanying the primer will list the reference materials used in researching its contents, along with an index of government departments, community groups and environmental organizations that can be contacted for further information on biodiversity.

A newspaper insert called *The ABC's of Biodiversity* will address many of the same issues as the primer. It will be distributed in four major daily newspapers, both English and French, across New Brunswick and is available from the council. Illustrated with cartoons, the insert's large-type question and answer format will make it accessible to the whole family as an informative and entertaining learning tool.

Contact:

Conservation Council of New Brunswick
180 St. John Street
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Forêt verte, planète bleue

Published to complement an exhibit of the same name at Quebec City's Musée de la civilisation, *Forêt verte, planète bleue* investigates the balance between humankind and the world we live in. Themes include causes and potential consequences of endangered habitats, the interdependence of forests and the biosphere, the attitudes of different civilizations toward forests, and the balancing of human needs and essential resources through sustainable development.

Why should people be concerned with the state of the world's ecosystems? Can such immense problems be solved? Is sustainable development the answer? What can individuals do to help? These questions and others are addressed by *Forêt verte, planète bleue*, which emphasizes the important choices that need to be made to preserve the earth. The book suggests that we must recognize interdependence as inherent to life if we are to have any future.

With photographs and illustrations to accompany clear explanations of the earth's ecosystems and the biosphere, *Forêt verte, planète bleue* fosters a sense of wonder and respect for nature in its readers. A brochure covers the same themes for a senior elementary and junior high school audience.

Contact:

Musée de la civilisation
85 Dalhousie Street
P.O. Box 155, Station B
QUEBEC CITY, Que.
G1K 7A6
Tel.: (418) 643-2158
Fax: (418) 646-9705

Les mystères du langage

Talking is so easy, we often forget just how complex it really is. This French translation of the bestselling book *Talk, Talk, Talk* by Jay Ingram spotlights language — from its anatomical, physiological and neurological aspects to the implicit and explicit rules of conversation. Everyone marvels at how quickly children learn words, but there are also many social conventions related to language that children absorb at an early age. Examples include alternating between one speaker and the next, as well as the hand, eye and voice gestures signalling whose turn it is to talk.

Les mystères du langage plays an important role in examining people's capacity for spoken communication, which surpasses the abilities of all other members of the animal kingdom. Published in April 1994, the book explores research done with chimpanzees, "wild" children who have grown up in an isolated environment, and stroke victims afflicted with the language disorder aphasia, combining biology with psychology in outlining the different views linguistic experts hold on their findings. How much of language is genetically programmed into us? Did Cro-Magnons outlast Neanderthals due to more advanced language skills? Is it possible to reconstruct "Proto-World," the first language ever spoken on earth? *Les mystères du langage* addresses these questions and many others for interested members of the communications and scientific education communities, as well as for adults and older adolescents with a desire to know more about how language really works.

Contact:

Les Éditions MultiMondes
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Owl Communications

Owl Communications has sparked children's interest in nature, science and the world around them since 1975. The organization's first activity was to launch *OWL* magazine. Now in its 20th year, *OWL* magazine is still winning awards and, more importantly, attracting a new generation of readers aged eight and up with its cartoons, Dr. Zed's science activities, puzzles, games, stories, articles and nature photographs. Two other magazines have joined *OWL*: *Chickadee*, for children aged three to eight, and *Tree House*, offering articles for parents on topics like kids' television and educational toys.

Owl Communications is also involved in book publishing, *OWL/TV*, the television counterpart to *OWL* magazine, movie and television specials, and the development of new media software, all designed for children and families.

Today, through its publishing and television initiatives, Owl is known to millions of children and their parents around the world.

Contact:

Owl Communications
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Québec Science

Québec Science is the only mainstream multidisciplinary science magazine in Canada. Founded in 1962, it reports on science and technology developments in disciplines as varied as astrophysics, genetics, mathematics and the social sciences.

With sales of almost 15 000 copies, the magazine is read by nearly 50 000 people in Canada each month. *Québec Science* keeps readers abreast of current scientific issues and the impact these issues have on their daily lives and on society in general. Health, the environment, energy, communications and nutrition are among the topics discussed in the magazine.

Québec Science covers a wide variety of topics and includes regular columns on books, the history of science, and science in our daily lives. This reader-friendly magazine presents articles on current affairs as well as in-depth pieces in a modern, eye-catching style. Because the magazine puts scientific jargon into easy-to-understand terms, articles are accessible to everyone.

Photographs and technical illustrations complement the articles. The magazine also produces an annual repertory of more than 200 museums and interpretive centres across Quebec.

Contact:

Le magazine Québec Science
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The Sizesaurus

Even if you have heard of a scientific unit of measure called a Newton, how would you describe it? Well, it's equal to the pressure exerted by a medium-sized apple in the palm of your hand. As teachers, journalists, scientists and students well know, one of the main obstacles confronting anyone who must communicate about science is dealing with statistics and scientific measures in a meaningful way. The secret is to translate these terms and numbers into something familiar that anyone can picture or understand. Instead of saying that blood is carried 160 000 kilometres throughout the body, you might point out that it is carried almost twice the length of Canada's coastline.

The Sizesaurus, scheduled for publication in April 1995, is a comprehensive thesaurus of comparisons, accompanied by a series of light-hearted essays on a wide range of measure-related topics. One essay looks at how current sports records and playing fields would be affected if competitions took place ... on the moon. Another essay titled *Towards a Santametric* calculates that with 378 million Christian children in the world, 15 percent of whom are naughty in any given year, and an average of 3.5 children per household, Santa Claus must visit 91.8 million homes during the 31 hours of Christmas that time-zone changes afford him. This leaves him with 0.0012156577 of a second per home to do everything — park the sleigh, slide down the chimney, lay out the gifts, eat the milk and cookies, reverse gears and get on to the next stop.

A table titled "If Superman Leaped Across Tall Objects, How High Would He Leap?" tells us that to make it over the CN Tower, the Man of Steel would have to jump up 533 metres, compared to only 146.6 metres to skim the top of the Great Pyramid at Cheops in Egypt. Readers also learn that if each molecule in a handful of snow were made to be the size of a pea, there would be enough snow to cover the surface of the earth at a height high enough to cover the Eiffel Tower (300 metres). There truly is something for everyone in *The Sizesaurus*.

Contact:

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M5E 1R2
Tel.: (416) 862-7777
Fax: (416) 862-2304

Allo hologramme

Allo hologramme is a travelling exhibit of over 30 holograms, created and displayed by CÉGEP students. Holograms are three-dimensional images that seem to float in the air; they are made by a split laser beam hitting an object and then being recorded on film. When a laser is shone through this film, it produces the three-dimensional image. In showing that holograms are not as complex as they might seem, the exhibit teaches viewers not to assume that science is always hard to understand.

The exhibit contains two sections, the first of which covers the history of holograms, how they are made, the scientific principles behind their design and construction, different types of holograms, and current and potential applications of holography. The information itself is presented in holographic form, attracting and maintaining the viewer's attention. The second portion of the exhibit features holographic works created by students, bringing the descriptions and explanations to life.

Contact:

Collège de Maisonneuve pour l'atelier Holostar
3800 Sherbrooke Street East
MONTREAL, Que.
H1X 2A2
Tel.: (514) 254-7131
Fax: (514) 251-9741

The Dinosaur Road Show

The Dinosaur Road Show is a travelling exhibit of real fossils, replicas and graphic displays of paleontological and geological information. What better way to get a child hooked on science? After all, Dr. Philip Currie, a prominent Canadian paleontologist, was first intrigued by a replica of sorts — a plastic toy resembling a dinosaur that he found in a cereal box.

Schools across Prince Edward Island welcome the road show. Although the primary audience is grade 3 to 9 students, some older students attend. Prior to a visit, teachers are supplied with information and projects to share with the children. The exhibit itself is complemented by a presentation and activities.

The travelling exhibit addresses the involvement of Canadians in the sciences of paleontology and geology by describing the significant finds at Drumheller, Alberta, and the joint Canadian-Chinese expedition in Mongolia. It also covers the theory of plate tectonics as it applies to the dinosaurs.

Since Prince Edward Island has no natural science museum, *The Dinosaur Road Show* fills a critical gap in the science education of the province's young people.

Contact:

The Great Island Adventure Park
P.O. Box 430
KENSINGTON, P.E.I.
C0B 1M0
Tel.: (902) 836-3883

Imagine That!

Edison, Einstein and da Vinci had different origins, ideas and professions. However, one word describes them all: inventor.

A bilingual discovery hall titled *Imagine That!* demystifies the invention process and emphasizes that any invented product is the result not only of technical aspects, but also of flashes of insight and human ingenuity. The desire to invent and innovate has been part of human history since the dawn of time. The display is interactive and visitors, young and old, are invited to learn by examining invention prototypes and by experimenting with them. Presentations by Quebecois inventors complement the prototypes and make the display more personal for the museum visitors.

The ideas behind each of the 17 inventions displayed are truly the sign of creative minds. For example, Skigrip is a device that prevents cross-country skis from slipping backwards. The inventor's inspiration for Skigrip came from thinking about how walrus play on ice floes.

Contact:

Musée de la civilisation
85 Dalhousie Street
P.O. Box 155, Station B
QUEBEC CITY, Que.
G1K 7A6
Tel.: (418) 643-2158
Fax: (418) 646-9705

The Inside Story: One Hundred Years of X-Rays

It is often said that the greatest scientific discoveries are the result of luck. Certainly, the scientist who discovered X-rays didn't set out to do so. In reality, his mind was preoccupied with something else entirely. On November 8, 1895, Wilhelm Roentgen, a professor of physics in Bavaria, was experimenting with cathode rays. In the course of his observations of the cathode ray effects, he noticed a phenomenon never before seen: invisible rays could produce images of things that the human eye could not see, like bones. He had discovered X-rays. Ever since, these rays have been used in medicine and, over time, other applications.

To mark the 100th anniversary of this discovery in 1995, the McCord Museum of Canadian History is preparing a bilingual exhibit titled *The Inside Story: One Hundred Years of X-Rays* that commemorates this important event and Canada's critical role in advancing the science. Although discovered in Europe, many research contributions were made here in Canada by such scientists as John Cox, Ernest Rutherford and Frederick Soddy.

This exhibit also shows the local history of this discovery. It also features the contributions of Montreal and Quebec City in gaining new knowledge on X-rays and radioactivity and brings to light unusual business endeavours exploring this discovery, such as using an X-ray to custom fit a shoe!

The exhibit, which covers 400 square metres, includes interactive displays and artifacts. Lectures by specialists in the field complement the exhibit.

Contact:

McCord Museum of Canadian History
690 Sherbrooke Street West
MONTREAL, Que.
H3A 1E9
Tel.: (514) 398-7100
Fax: (514) 398-5045

The Lake Ramsey Laboratory

On one hand, Lake Ramsey is typical of Northern Ontario, housing a fairly broad range of plant and animal life. On the other hand, surrounded by Sudbury, it is an ecosystem stressed by the encroachment of man and the demands imposed by a medium-sized industrial city. Lake Ramsey is a source of drinking water; a place to fish, water-ski and snowmobile; and even an airstrip!

Science North is developing a major exhibit focusing on northern freshwater ecosystems, using Lake Ramsey as an example. The Lake Ramsey component involves hands-on activities such as identifying skulls and bones of lake animals, mapping temperature distribution with a geographical information system, and looking at micro-organisms through microscopes.

Real-time monitoring systems indicate dissolved oxygen content and temperature patterns. Videos profile Northern Ontario scientists. The exhibit interprets and explains the natural systems at work in the watershed and the impact that humans have had over the past 100 years. In a related initiative, college and university students rehabilitate the shoreline, keep records on vegetation and monitor the pH level of the lake. The target date for completing the Lake Ramsey Laboratory is the summer of 1996.

While the Lake Ramsey Laboratory is housed inside the Science North building, visitors have the opportunity to get closer to the lake by exploring the boardwalk that borders around it.

Science North has a 10-year record of excellence in science education. It has produced major exhibits featuring robotic dinosaurs, live animals, laboratory-style exhibits and interactive computer programs. It has also created and produced three-dimensional films, laser shows, and a play about Grey Owl, an intriguing naturalist active early in this century.

Approximately 200 000 people visit Science North each year, which features services in both English and French.

Contact:

Science North
100 Ramsey Lake Road
SUDBURY, Ont.
P3E 5S9
Tel.: (705) 522-3701
Fax: (705) 523-1283

The Many Faces of Nature

When people think of certain animals, they often apply human characteristics to them. The lion is brave, the fox, sly, and the mule, stubborn. A travelling exhibit titled *The Many Faces of Nature* encourages viewers to think about humankind's relationship with nature. Five different modules explore how we think about nature and how we have used it to benefit and enrich our civilization. The modules are "Nature Exploited," "Nature Imagined," "Nature Studied," "Nature Collected" and "Nature Presented."

Interactive elements include a quiz for visitors on environmental values. A ghost-like video image of Carl von Linné, suspended in mid-air, makes it appear as if the 18th century Swedish naturalist himself is explaining his system of scientific nomenclature.

The Many Faces of Nature is designed to appeal to both naturalists and the general public, including youth. Following its opening at the Biodôme in Montreal, the bilingual, 200-square-metre exhibit will tour the country.

Contact:

Biodôme de Montréal
4777 Pierre-de-Coubertin Avenue
MONTREAL, Que.
H1V 1B3
Tel.: (514) 868-3050
Fax: (514) 868-3065

Our Brain, Living Supercomputer

Novelist Mary Shelley wrote about it in *Frankenstein*. Scarecrow sang about it in *The Wizard of Oz*. French philosopher Julien Offray de la Mettrie called it the seat of thinking. The brain has confounded and fascinated generations with its complexities of emotions, ideas, reasoning and logic.

La Cité des arts et des nouvelles technologies de Montréal has produced a bilingual exhibit on the brain, covering 300 square metres. The exhibit, titled *Our Brain, Living Supercomputer*, examines the physiology of the brain, the functioning of the cerebral cortex, memory, subcellular mechanisms, surgery, illnesses, neural grafts, gene therapy and bioethics.

Interactive displays include the five senses test and three-dimensional brain imagery. To demonstrate how we use our eyes to judge distance and depth, visitors can try on a pair of glasses that makes everything appear upside down. Three-dimensional magnetic resonance images show the brain's internal landscape.

A video called *A Black Cloud* profiles a boy suffering from severe epilepsy. Controversial issues related to brain surgery are also addressed: lobotomies, the use of fetal tissue, and brain and neuron transplants.

The exhibit, which is complemented by a learning guide, provides a probing look at the organ that makes us human. *Our Brain, Living Supercomputer* will be launched in October 1995 in Montreal and will be touring Canadian venues.

Contact:

La Cité des arts et des nouvelles technologies
de Montréal
15 de la Commune Street West
MONTREAL, Que.
H2Y 2C6
Tel.: (514) 849-1612
Fax: (514) 982-0064

Science-by-the-Sea

Science-by-the-Sea is an interpretative display at Indian Point, St. Andrews, New Brunswick. Its shorefront location overlooking Passamaquoddy Bay is well-situated for describing St. Andrews' extensive role in marine research, commercial and recreational fisheries, aquaculture and conservation. The display helps to increase public awareness of local scientific and technological achievements. Genetics research conducted at The Atlantic Salmon Federation has led to improved strains of salmon for aquaculture. St. Andrews Biological Station, established in 1899 as the first marine station in Canada, conducts stock assessments of important commercial fish species in the Bay of Fundy and the Gulf of Maine. It also studies the culture of Atlantic salmon and other marine species. The Huntsman Marine Science Centre, along with the Department of Fisheries and Oceans, operates the Atlantic Reference Centre, which provides taxonomic and research services, and an aquarium/museum, which receives over 30 000 visitors annually.

The exhibit tells the region's story, past and present, using panels within a kiosk and informative outdoor panoramic displays that identify local points of interest such as herring weirs and unique tides. A wheelchair-accessible telescope gives close-up views of all four sections of the bay and their particular attributes.

Contact:

The Atlantic Salmon Federation
P.O. Box 429
ST. ANDREWS, N.B.
E0G 2X0
Tel.: (506) 529-4581
Fax: (506) 529-4438

Science on the Move

Science on the Move brings a travelling science show and interactive displays to fairs, festivals and public places throughout urban and rural Manitoba. Displays encourage hands-on learning about topics such as the physics of TV screens, hidden electricity in the human body, recycling, energy conservation, CD-ROM technology and the World Wide Web/Internet.

Inviting scientists from each stop on the tour to give presentations makes the show more relevant to the community. Topics that have been covered by these local scientists include entomology, subterranean water flow, electronic technology, and chemistry from cabbages. Visitors also enjoy informal conversations with these scientists, who are encouraged to refer tricky questions to the closest available authority.

Audience participation helps recreate the fun of a busking performance on the street during hourly demonstrations by program staff on a small stage. Razzle-dazzle, humour and a lively approach bring topics such as the mechanics of sports and amusement park physics to life.

At workstations, visitors use computers and scientific instruments to conduct experiments on themes such as relative density, optical illusions, magnetism and momentum. In one simple but effective activity, young people are given one minute to remove as many chocolate chips as possible from a cookie; they are then asked to do the same thing while keeping the cookie intact, creating an analogy for sustainable development.

Science on the Move demystifies science and challenges preconceptions with its engaging, understandable presentations and displays. It provides youth and their families with an opportunity to learn in an informal and relaxing atmosphere.

Contact:

Manitoba Museum of Man and Nature
190 Rupert Avenue
WINNIPEG, Man.
R3B 0N2
Tel.: (204) 956-2830
Fax: (204) 942-3679
Internet: spornitz@mbnet.mb.ca

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