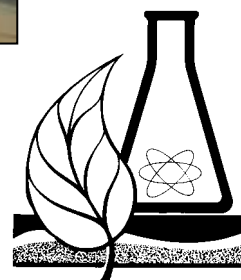


THE ALBERTA SCIENCE TEACHER

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Science Olympics



From the Editor



Teachers should be used to change. I know many teachers who are used to checking their pockets to see if they have enough nickels and dimes to buy a drink from the pop machine, but this is not the type of change I am thinking of.

Every fall we face a new classroom of kids. Sometimes, the staff room has new faces in it. Most of us have schedules that vary on a yearly basis. Raise your hand if you had to prepare for a new course over the summer. Yet, despite these obvious fluctuations in our careers, I have seen change bring horror to many a colleague's face, including my own.

As I sit down and write this, I hope I've experienced my share of changes. Some time ago our school experienced the tragic death of two students in automobile accidents, each a year to the day apart from

each other. It was difficult not to think that our little community was cursed. But the staff, parents and students pulled together and helped each other through the pain, crying and doubt. I still pause at the pictures in the hallway, but I would not be surprised if many of the current students even know the names under the faces. Time does heal.

And then, while I was visiting family this summer, I got a phone call I never expected. Our vice-principal, and a very dear friend, had drowned in a boating accident. The man who had been a mentor to so many of us was suddenly gone. With only two weeks until the school year started we all had to find a way to continue, even through the renovations on our school building.

Now we are over a month into school and the year is continuing. It took the staff longer, and many are still trying to heal. The students are getting to know a new social studies teacher. I am adjusting to a new position after I accepted the VP and counselling duties that my friend had done so very well. The students have moved on faster than us adults. I consider it a testament to the resilience of children. It is both good and bad news that time heals. We will learn to do without him. Also, how long will it be till students wonder whose picture is by the office and why it is hanging there?

So, whatever change comes your way this year, I wish you

well. If I dare offer any advice, it is to have trust in your coworkers, friends and family. Even if the new experience for you is a good one, they will be there to cheer you on and congratulate you. They can be wonderful support.

And I need to add one thing—here's to you, Keith.

Derek Collins

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Alberta Education Science Programs Update

Elementary Science Needs Assessment

A review of Alberta's elementary science program is scheduled to begin in mid-October 2005. This first step toward update and renewal of the program will be carried out through a variety of processes including focus groups, questionnaires and review of educational research. This will be your opportunity to provide input on what's working with the current program and what's not, and what you see as the need and opportunity for change. A questionnaire and a schedule of regional focus group meetings will be posted on the Alberta Education website by the end of October 2005. Completion of the needs assessment will lead to program development and resource selection and development in 2006 to 2008, followed by field testing in 2008/09, optional implementation in September 2009, and provincial implementation in September 2010. For more information, contact Caroline Nixon at (780) 427-9593 or caroline.nixon@gov.ab.ca or Bernie Galbraith at (780) 422-3218 (dial 310-0000 for toll-free connection) or bernie.galbraith@gov.ab.ca.

Field Testing of the Revised Biology 20-30, Chemistry 20-30 and Physics 20-30 Programs of Study and Draft Learning and Teaching Resources

Teachers are currently field testing the revised Biology 20, Chemistry 20 and Physics 20 revised program and draft resources. As they are field testing the 20-level resources, publishers

are completing work on the first drafts of the 30-level material. McGraw-Hill Ryerson and Thomson Nelson are each developing biology and chemistry texts. Pearson Education is developing the physics text. The June 2005 resource development drafts for each of the programs are available at www.education.gov.ab.ca/k_12/curriculum/bySubject/science/default.asp. The 30-level subjects will be field tested during the February 2006 semester. Teachers were surveyed regarding their preference for separate or combined 20- and 30-level textbooks. Almost all of the approximately 180 respondents indicated preference for combined textbooks. So, upon completion of the 30-level field test, the publishers will combine the Grades 11 and 12 material into the single text. Learning and teaching materials are scheduled to be available for purchase at the Learning Resources Centre (LRC) in early 2007.

Implementation of Science 20-30 Programs of Study and Learning and Teaching Resources

The revised Science 20 Program of Studies is scheduled to be implemented in September 2006, followed by Science 30 in September 2007. The Science 20 textbook will be available through the LRC in early 2006. Included with the textbook is a digital copy of the text, the Science 20 rEsource, which will be downloadable free of cost from the Alberta Education Tools4Teachers website. The Science 20 Teacher Resource Guide, featuring extensive assessment support, will be sold on CD through the LRC and will also be available at no cost through the Tools4Teachers website. For more information regarding the Science 20 resource, please contact Maureen Stanley at (780) 427-7499 (dial 310-0000 for toll-free connection) maureen.stanley@gov.ab.ca.

Implementation of the Biology 20-30, Chemistry 20-30 and Physics 20-30 Programs of Study and Learning and Teaching Resources

Teachers who have participated in the field test of the revised program will be required to return to teaching the current program until provincial implementation because the diploma examinations parallel current programming. The year between field testing and provincial implementation is needed to provide the time required for textbook development, printing, distribution and purchase. The revised Biology 20, Chemistry 20 and Physics 20 programs of study are scheduled for implementation in September 2007, followed by the 30-levels in September 2008. For more information, contact Caroline Nixon at (780) 427-9593 (dial 310-0000 for toll-free connection) or caroline.nixon@gov.ab.ca.

Safety in the Science Classroom Resource

The resource "Safety in the Science Classroom" is now scheduled to be released by mid-October 2005. It has been developed by Alberta Education for use as an information source and a general guideline for promoting safety in science. The document includes references to current legislation and regulations, identifies roles in promoting safety and provides information on hazards and



strategies for risk minimization. A single copy will be mailed to each school. The LRC will have copies for purchase at the cost of production once the document becomes available. The resource will be available on the Alberta Education website at www.education.gov.ab.ca/k_12/curriculum/bySubject/science/screport.pdf. For more information, contact Vic Romanyshyn at (780) 415-8958 (dial 310-0000 for toll-free connection) or vic.romanyshyn@gov.ab.ca.

Professional Development Opportunities

MacEwan College continues to open its classrooms to high school science teachers—current and retired—free of charge! Interested teachers may audit one science course per term. Also, organic workshops will be available next summer. MacEwan is also considering visiting remote communities as well, based on funding availability. For more information, please contact Dr. Roy Jensen at JensenRH@MacEwan.ca.

On June 29, 2005, Alberta Education and MacEwan College co-hosted an evening social at the downtown campus in which Dr. Robert Hilts presented the Chemistry of Titan Revealed. A group of teachers, scientists and science-minded individuals enjoyed the visually stunning presentation and discussion of the recent findings as revealed by the Cassini spacecraft. Debra Campbell, Chemistry 30 exam manager; Kathryn O'Grady Morris, Chemistry 30 examiner; and Drs. Jensen and Lucio Gelmini, both chemistry instructors with MacEwan; facilitated this event. Special thanks to Drs. Jensen and Gelmini for providing the teachers with parting gifts of science textbooks and glassware. For information regarding possible future events, contact Debra Campbell at debra.campbell@gov.ab.ca.

Conference 2005 Highlights

“Science—A Centennial Celebration”

The ATA Science Council Conference will take place at the Fantasyland Hotel in Edmonton November 11–13. Here are some of the highlights:

Registration

The registration desk will be in ballroom E of the Fantasyland Hotel (3rd floor).

Registration Hours

Thursday, November 10:
5 p.m. to 9 p.m.

Friday, November 11:
7 a.m. to 5 p.m.

Saturday, November 12:
7 a.m. to 4 p.m.

Keynote Speakers

Friday, November 11

Marilyn Steinberg: Educational Opportunities with the Canadian Space Agency

Frank Sulloway: In Darwin's Footsteps: How the Galapagos Islands Revolutionized Darwin's Thinking

Saturday, November 12

Philip Currie: The History of Dinosaur Hunting in Western Canada, a Perspective on the Eve of the Centenaries of Alberta

Doug Hube: 1905: “Annus Mirabilis” for Albert and Alberta

Michael Shermer: Why People Believe Weird Things

David Naylor: The Herschel Telescope—Canada's Role

Sunday, November 13

Bob Church: Dare to Dream—No Matter Where You Come From

Rick Mrazek: From Merlin to the Matrix—Changing Views of Science

Saturday Workshops at TELUS World of Science

Two morning workshops will be repeated in the afternoon.

Introductory Astronomy (Grades 6 and 9) and Simple Machines Using a Rube Goldberg Theme (Grades 4, 5 and 8). Free bussing courtesy of EPCOR.

Social Events

Friday night banquet and entertainment with Johnny “Bagpipes” Johnson (\$10 per person).

Saturday night wine and cheese reception with entertainment by Phoebe Legere (\$5 per person).

Free Sunday brunch—limited tickets available. Choice (discount) Passes to the World Water Park or Galaxyland

General Information

- Great workshops and sessions at the hotel
- A Science Olympics on Friday afternoon
- Video conference on Friday with CSA robotics specialist Marc Fricker
- Saturday morning computer workshops at Ross Sheppard High School
- Daily draw prizes
- Exhibitor's stampede cards available; get your card stamped by each exhibitor and enter the completed card to win great prizes.

Please check the conference website for registration and more information: www.atasc.ab.ca/conference/. Full conference information will be available in the conference booklet. We look forward to seeing you in November!

Online Biology Resources

I use the following websites to teach general science and biology to my students. The URLs provided below were last accessed on October 17, 2005.

The Biology Project— University of Arizona (www.biology.arizona.edu/)

I use the Online Onion Root Tip Activity to familiarize my students with the phases of mitosis and to give them practice in identifying the stages of cell mitosis before they do the exercise using microscope slides in our lab.

The Karyotyping Activity allows students to see what a karyotype looks like, practise sorting and matching chromosomes, and read and analyze three case studies.

National Science Teachers Association (www.nsta.org/)

Navigate to teacherResources > teacher resources: home > SS&C MicroUnits. The Scope, Sequence and Coordination Micro-Units were developed as part of a project to promote best practices in science education by the National Science Foundation in the U.S.A. The ones I have tried are excellent. They provide logical and thorough development of the concepts, and come with ready-to-use student handouts and teacher guides.

Exploratorium (www.exploratorium.edu/)

Their well-photographed online cow's eye dissection can be used in place of a hands-on lab to prepare students for an upcoming dissection of the eye or to review

the activity after completing it. Other good resources include the Exploratorium's Science Snacks, which are instructions on how to make classroom versions of some of their more popular exhibits, and the hands-on activities that provide your students with detailed instructions on setting up some pretty neat projects.

Neuroscience for Kids (<http://faculty.washington.edu/chudler/neurok.html>)

This site contains a wealth of information on the nervous system—how it works, what can go wrong with it, how problems are diagnosed and treated, activities designed to better understand its functioning, current news articles and answers to questions. My Biology 30 students were especially fascinated by the list of 45 types of neurotoxins, along with the organism that produces them and their specific action on the neuron.

Cell Biology Animation (www.johnkyrk.com/index.html)

This site is written at a university level but illustrates complex processes like DNA structure, replication, transcription and translation with concise animations. I use the DNA animations to clarify this topic for my students and plan on introducing the cell anatomy, cell function and cell membrane ones to my Science 10 class this semester. The Photosynthesis, Glycolysis, Krebs Cycle and Electron Transport animations are well done but need to be used with caution—strong students can gain a better understanding of the topics shown, but weaker students may be overwhelmed.

Wade Strass
Technology Director

Lab Tech Conference 2006

Planning is already under way for conference 2006 which is to be held November 17–19 at the Delta Lodge at Kananaskis. If you have any ideas for keynote speakers, presenters, activities or sessions, please send your ideas to Barb Borchert (bborchert@atasc.ab.ca) or Mary McDougall (mmcdougall@atasc.ab.ca).

11th CCWESTT “Producing Influential Leaders”

A national conference for the Advancement of Women in Science, Engineering, Trades and Technology (SETT) will be held in Calgary, Alberta, in June 2006. The conference provides a forum for participants to gain leadership skills, network with other dynamic colleagues and celebrate women's achievements in SETT. If you belong to an organization that shares the interests and goals of the conference, you are encouraged to participate.

Enclosed is the First Announcement and Call for Papers for “Producing Influential Leaders.” The program committee is seeking proposals for papers, workshops, panel discussions and posters related to the conference theme. Don't miss this opportunity to showcase your research or successful initiatives.

For up-to-date information regarding the conference or to register, visit the website at www.cctestt2006.ca. Registration packages will be mailed in January 2006.

Cheryl Sandercock
Conference Chair

SciTech Week Resources

Science and Technology Week 2005, which ran October 7–16, delivered many new classroom resources for Alberta’s science teachers. They included the enclosed 2006 wall calendar featuring science education programs from across the province, classroom contests with exciting prizes that are still running and a website full of activities guaranteed to inspire students to investigate careers in the sciences. The enclosed calendar highlights 12 science education programs from the Science Alberta Foundation’s Chemistry and the Chocolate Factory to Operation Minerva’s job shadowing and mentoring program for girls, sponsored by the Alberta Women’s Science Network. You and your students can order additional free copies of the calendar from the Science and Technology Week website at www.scitechweek.gov.ab.ca. The website offers a variety of fun activities and events for students of all ages. Elementary school students can still enter a contest to design the mascot for next year’s Science and Technology Week campaign and win a LEGO Mindstorms Robotics Invention System Set worth \$300. A new contest for junior high school students offers the winning classroom a SMART Board interactive whiteboard and floor stand and an LCD computer/video projector. To enter, classes view the Alberta Innovation video series on the website, then write a 500-word essay about their favourite innovator in the series and how his or her discovery could be expanded to benefit Albertans and other people around the world. Teachers can find a complete list of links between the videos and Alberta’s science

curriculum on the website. The Alberta Innovation videos showcase past winners of the Alberta Science and Technology (ASTech) Awards whose amazing discoveries and cutting-edge research are helping people all over the world. The videos were originally broadcast on Global Television and were developed by Alberta Innovation and Science in cooperation with Western Economic Diversification Canada, and Global Television. The latest in the series, Alberta Innovation 2005, appeared on Global Television on October 15. The website also offers a scavenger hunt, a “Jeopardy” game and, new this year, instructions on how to organize a Science Olympics in your community. In addition, students may enjoy some of the fascinating profiles of Albertans working in science- and technology-related jobs. The website also provides a list of community events celebrating science and technology across the province all year round.

Science and Technology Week 2005 was supported by the following sponsors and partners: Titanium–Alberta Ingenuity, Alberta Science and Research Authority, Global Television, iCORE, Pfizer Canada Inc., Gold–Synchrude, SMART Technologies, *Calgary Herald*, *Edmonton Journal*; Silver–Alberta Energy and Utilities Board, Alberta Heritage Foundation for Medical Research, Canadian Association of Petroleum Producers, Petro-Canada, Sharp’s Audio Visual Ltd., Schulich School of Engineering, University of Calgary; Bronze–APEGGA, University of Alberta, University of Lethbridge, Partners–PRAXIS, and Science Alberta Foundation.

For more information about Science and Technology Week, visit www.scitechweek.gov.ab.ca, call (780) 427-4498 or e-mail is.inq@gov.ab.ca.

Why Ingenuity? And Why Does Alberta Need It?

Ingenuity is a creative response to real-world problems. It is practical. Born of necessity. It is problem-driven creativity. It is the quality we wait for when we are presented with limitations or when something causes us to say, “If only we could do this,” or “If only we didn’t have to do that.” If we ponder long enough, a flash of ingenuity arrives, delivering new perspectives. So ingenuity gets around it, or goes over it, or drills its way through it. Ingenuity changes the world. It opens up new possibilities forever. Ingenuity is the force that built this province and made possible all that we enjoy today. And ingenuity is the fuel that will ignite Alberta’s future.

That’s why Alberta Ingenuity seeks out people who are filled with ideas and creativity—people like the teachers and students who are yearning for discovery and new challenges. Alberta Ingenuity is particularly interested in finding and supporting students whose unique ideas in science and engineering research will change Alberta and the world.

We applaud the foresight and effort of science teachers in Alberta who are, consciously or not, sparking young people to enter these essential career areas so that their children will also live in a healthy and prosperous world.

We have high expectations for what Alberta’s science teachers can inspire. Science teachers have an enormous influence on the science and innovation in a culture. Alberta Ingenuity values the role you play and is honoured to support the annual conference.

Visit our display at the ATASC conference. We would very much like to meet you.

Exploring Electrical Principles Through Science-In-A-Crate

“Hey, is that a crate?” an eager Grade 9 student asks with excitement as a big, black trunk is wheeled through the classroom doors. “Cool.”

For Stevens Rancourt, these words must be music to his ears. Rancourt, who teaches French immersion math and science at Cochrane High School, has spent the past few months diligently assembling the first truly bilingual Science-In-A-Crate on the topic of Electrical Principles. When a divisional facilitator for Rocky View School Division put out a call for a crate developer, Rancourt immediately jumped on board. “I was curious to see more about Science Alberta Foundation and if there were any French crates for the grades I teach. After some research, I found out there weren’t any,” says Rancourt, explaining he saw the value in the project. “I thought, if I want efficient and reliable science resources in French, why not give them a call and ask if the new crate on Electrical Principles and technologies could be in French. They said, ‘Of course. Why don’t you do it!’”

Manager of learning projects for Science Alberta Foundation Christine Leach, was thrilled to have a teacher with Rancourt’s diverse background and skills join the development team. “We’ve been working toward developing bilingual crates and because Stevens teaches science in French, it was the perfect crate to pilot the bilingual program,” says Leach, adding Science Alberta Foundation plans to tackle additional bilingual crate topics in the future. “Stevens has incredible spirit and

enthusiasm. He has a terrific sense of what students need to learn the content and skills. He saw this project as a way to expand his students’ knowledge, as well as his own professional development.”

For those unfamiliar with Science Alberta Foundation’s flagship program, Science-In-A-Crate is a one-of-a-kind science resource that includes hands-on activities to engage multiple learning styles. Each trunk-sized crate links to Alberta curriculum outcomes; Electrical Principles addresses the need for learning resources that focus on the Grade 9 curriculum topic of the same name.

Exploring the form and function of electrical devices, systems and processes, Electrical Principles puts students in the shoes of an information assurance company that specializes in data security. After receiving news that a team of hackers will be breaching the company’s security systems, students must build a series of potential updates into their current security devices. With seven original activities, including light bulb efficiency, parallel circuits and power generation, this new crate offers applications to enhance planning, analyzing, interpreting and teamwork skills, to name a few.

From deciding on a theme and writing a storyline to recruiting a team, establishing a budget, developing activities and prototype materials, and extensive student and teacher testing, each new crate topic takes about five to six months to develop. As the crate developer, Rancourt devoted a great deal of time and energy to each phase of the program.

“As crate developer, my role is to work with the project manager and supply manager to develop activities related to electrical principles and technologies,” explains Rancourt, whose classroom experience and science

knowledge were invaluable to the process. “From phase one to the final phase, I did a lot of researching background information, brainstorming sessions, conducting testings and reviews—for one goal only: to obtain the best crate possible.”

Science Alberta Foundation boasts a development team with a broad range of experience and leadership in science education. Working closely with Leach and other collaborators, Rancourt also had a team of science experts with a particular hankering for electricity-related sciences at his disposal. From their expertise and knowledge, he was able to design, develop and produce the finished piece. But what does Rancourt hope to achieve when all is said and done?

“I want to create interest and engage students to learn more about Electrical Principles and Technologies,” he says. “But most importantly, for the French immersion students, they can now use their second-language skills to participate in multiple hands-on activities in French, using real science technologies.”

On September 12, Rancourt’s students got a sneak peak at the new crate—putting the activities to the test in both French and English. Watching as the class scattered about the room, keen on investigating each new fabrication, it was easy to see that Rancourt’s work wasn’t in vein—he’s engaged and inspired the young minds in his class. “Without teachers like Stevens, we wouldn’t be able to make this happen,” says Leach. “We can’t thank them enough for their expertise and dedication to our programs.”

To find out when Electrical Principles will be available for preview, or to find out how you can get involved in crate development, check out ww.sciencealberta.org.

Heather C. Hudak

What Is Computing Science?

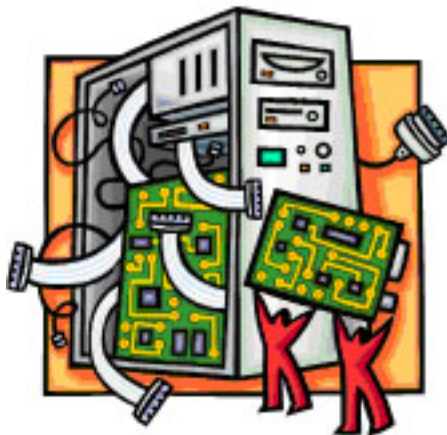
Computers are involved in every field of human endeavour today. We are more productive thanks to computers: we can use our personal digital assistants to manage our schedules and tasks, we can perform technical tasks faster and more accurately and we can do our shopping from the ease of our favourite armchair. We have fun using computers: we listen to music and watch videos, we play games and we share our photos with far away family and friends. We can find old friends on the Internet and we make new ones in chat rooms. However, although everyone seems to be familiar with computers, at least enough to use them in everyday life, quite a few misconceptions still exist about what computing science is and what computing scientists do. Computing science is about understanding what computers can do, designing procedures for enabling them to solve interesting problems efficiently, and managing teams that develop software so that they meet time and cost constraints. For many problems, we can implement software programs to find accurate solutions fast. But there are still problems, which even the fastest computers today would take centuries to solve. A famous example of this category of problems is the "Travelling Salesman Problem": given a number of cities, and the cost of travel between each pair of cities, what is the cheapest way of visiting all cities and returning to the starting point? Solving this problem for 15,112 German cities took 22.6 years and we haven't solved it for more cities yet! Thankfully, there is still a huge set of interesting problems that we can solve, with truly fascinating

applications. Take for example medical informatics. Today, surgeons have X-ray vision: instead of having to consult X-rays while operating, they can have digital 3D scans superimposed on the patient to guide them through the details of each patient's anatomy (www.ai.mit.edu/projects/medical-vision/surgery/surgical_navigation.html). Oncologists can irradiate tumours much more precisely because computers can extrapolate the precise location of tumour cells from the patient X-rays (www.aicml.cs.ualberta.ca/research/projects/index.php). And experts can treat, even operate on, patients remotely (www.business2.com/b2/web/articles/0,17863,530930,00.html) thanks to the Internet, which enables fast communication and data exchange between patients, local doctors and remote specialists. It is hard to believe that the Internet is still in its mid-30s! It started as an academic project between four universities connecting a few researchers, and today there are fibre cables hugging the whole globe, making it a global village and making each one of us truly citizens of the world! News travels faster than ever, and for the first time each individual can act globally: we can vote even if we are far away from home (www.evot.ca/), and

we can help people whom we never met in their time of need through the click of a button (<http://american.redcross.org>). Robots can also help in times of need (www.msnbc.msn.com/id/9131498/). Roboticists have brought cutting-edge technologies to disaster areas, like the cities struck by Hurricane Katrina, last year's tsunami and the World Trade Center. And when they don't crawl in dangerous small places where people cannot go, robots learn to play soccer (www.cs.cmu.edu/~robosoccer/main/) while, at the same time, we study them to understand how we learn by ourselves or collaboratively or even in adversarial settings.

These are but a few of the applications of computing science and there seems to be no limit to what one can do with a CS degree. Our graduates have gone on to careers as educators, user-interface designers, application developers, games developers, business managers, political scientists and researchers. Computing is a fast-moving, exciting discipline. The demand for computer professionals is now bigger than it was before the dot-com bust. There are a lot of interesting and rewarding careers and demand for graduates is outstripping the supply. This trend will last for the foreseeable future, so now is a great time to direct students into a computing profession. Let your students know about the opportunities that a CS career can open to them by visiting the Department of Computing Science at the University of Alberta (www.cs.ualberta.ca).

For more information, contact Eleni Stroulia, associate professor and Outreach Program director, Department of Computing Science, University of Alberta, Edmonton T6G 2E8; phone: (780) 492-3520; website: www.cs.ualberta.ca/outreach.



North Saskatchewan Watershed Alliance

Are you looking for a way to connect your students to local issues while contributing to a real-world project? If so, then watch for the new educational package being distributed to schools in the North Saskatchewan watershed this fall. The package, which includes three copies of the North Saskatchewan Watershed Alliance Fall 2005 school newsletter, a template for student submissions and a CD-ROM of the State of North Saskatchewan Watershed Report 2005 will be mailed to school librarians in late October or early November 2005.

The newsletter will primarily focus students on learning more about the sub-watershed they live in based on information included on the CD-ROM, and will encourage student input to the Integrated Watershed Management Plan that the NSWA is working on. Deadlines for student submissions are December 2005 (first intake) and June 2006 (second intake). Curriculum links and highlights are as follows:

Curriculum Links

- Grade 7—Interactions and Ecosystems
- Grade 8—Freshwater and Saltwater Systems
- Grade 9—Biological Diversity and Environmental Chemistry

Highlights

- Background information
- State of Watershed CD-ROM, with data on local sub-watersheds
- Student-directed exercises
- Invitation for classroom input in North Saskatchewan Watershed Plan

For more information on the NSWA or the educational package, visit www.nswa.ab.ca or e-mail billie.milholland@edmonton.ca.

APEGGA Science Olympics 2006

Science Olympics is an interactive science competition held in communities across the province as part of National Engineering and Geoscience Week. Teams of students compete in take home and mystery event challenges. Teachers like Science Olympics because it takes science out of the classroom and into a fun atmosphere where students apply their science knowledge, creativity and ingenuity to solve problems. Students like Science Olympics because it is fun, they like hands-on science and problem solving, and they like to compete and win awards for their school. Nine Science Olympics will be held throughout Alberta in February and March 2006 (see list below). The Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) invites teachers to organize and register student teams for the fun at Science Olympics 2006. General information packages and registration forms will be mailed early in November 2005 to schools in the areas of the nine Science Olympics locations noted below. The material will also be available

at www.apegga.org/NEGW/olympics.html. To request details by mail or e-mail, contact Jeanne Keaschuk at APEGGA in Edmonton, jkeaschuk@apegga.org, (780) 426-3990 or toll free 1-800-661-7020.

APEGGA Science Olympics 2006

Calgary

February 25, Stampede Park, Grades 1–12

Grande Prairie

February 25, Grande Prairie Composite High School, Grades 7–12

New Locations, February/March 2006

Cold Lake

Hinton

Lethbridge

Lloydminster

Medicine Hat

Red Deer

Grades, dates, event locations and registration information for the new locations will be posted on the above APEGGA link and included with the November mailing to schools.

Edmonton Regional Science Olympics, sponsored by APEGGA March 4

Shaw Conference Centre, Grades 1–12



The Alberta Science Literacy Association Has Something to Celebrate!

During 2004/05, two of our networks celebrated milestones that marked how long they have been connecting scientists to students and the cool ways in which this can happen.

In Edmonton, Dan Garsonnin, a 10-year volunteer with the Edmonton Science Outreach Network (ESON), is an aviation enthusiast. The ESON program encourages science learning through hands-on participation, so Dan teaches students about flight and aerodynamics by having them build free flight model airplanes. In December 2004, Dan built his 10,000th model airplane with elementary and junior high students. With his support and instruction, students design, build and fly their completed aircraft in the school gymnasium. The planes are so

light they can glide for several minutes indoors. Dan repairs any damage from crashes on the spot so that students can bring home their working model. Students learn flight principles through the tangible experience of building and flying their own plane. Dan helps them actively engage in science in a way that goes beyond theory and textbooks. Students often tell Dan that they have been anticipating going into the grade when they can build an airplane themselves. As a result, Dan has become a mainstay in many schools, and teachers invite him back year after year to share his expertise and passion for aviation. In 1991, a group of Calgary scientists founded the Calgary Science Network (CSN) to help students connect classroom learning with science in the world around them. It is fitting, then, that 15 years and 200,000 students later, CSN celebrated their accomplishments with a science and flight presentation that captivated a classroom of Grades 5 and 6 students. Using a balloon-powered helicopter, a flying bird model and his radio-controlled plane

(along with other interesting flying toys) Dave Fowlow, a four-year veteran CSN volunteer was able to explain the science of flight with ease and simplicity to 40 students and guests. Dave is a keen flight enthusiast, and his love of all things aeronautic came through in both his presentation and his ability to successfully field students' questions. Helping students to understand both the general principles and the practical applications behind flight is part of why Dave volunteers—and part of

what the scientists in 1991 hoped would happen when they established CSN.

ESON and CSN, along with Praxis (Medicine Hat), Peace Country Science Network (Grande Prairie) and Central Alberta Science Network (Red Deer) are all part of the Alberta Science Literacy Association. Dedicated to the promotion of science literacy through connecting scientists to the community, ASLA networks will help connect you to a volunteer for a classroom science activity and curriculum support. For further information, please contact:

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Scientific Literacy for Canadian Students

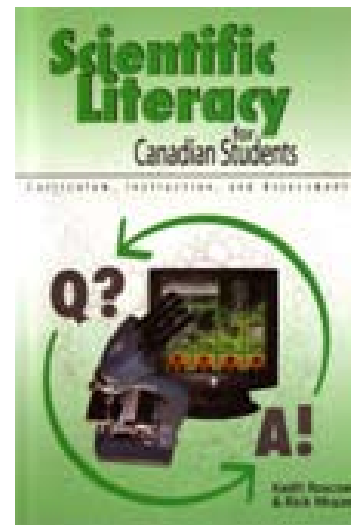
Scientific Literacy for Canadian Students: Curriculum, Assessment and Instruction by K. Roscoe and R. Mrazek. Calgary: Temeron Books, 2005. ISBN 1-5509-288-2, 248 pages, \$28.95. Temeron Books, 210-1220 Kensington Road NW, Calgary T2N 3P5.

Scientific Literacy for Canadian Students is a response to a need perceived by the authors for an up-to-date, concise and practical resource for beginning science teachers. Available resources did not seem to be aligned closely enough with provincial and national science learning outcomes, and we thought that producing our own science methods book would be an effective way to address this gap. Our priority was to produce a user-friendly resource of research-based practical strategies for implementing scientific literacy in the classroom, from elementary through to senior high level. The book is organized along fairly conventional lines with chapters on the science curriculum, learning, classroom management, teaching strategies and

assessment. However, the book approach departs from other resources in its attempt to embody some of the curriculum principles found in scientific literacy and current assessment models, notably alignment of the resource with mandated science-learning outcomes for Canada and its use of a broad-based approach.

The learning outcomes mandated by the Council of Canadian Ministers (1997) in the *Common Framework of Science Learning Outcomes* are a complex combination of concepts, skills and attitudes. These are the abilities needed to provide students with a strong foundation in science for further study and science-related occupations, as well as those necessary for richer everyday lives and informed responsible citizenship. This diverse set of expectations, many fairly new to the science curriculum, calls for a correspondingly diverse array of matching strategies for planning, instruction, management and assessment—what we call a broad-based approach.

Recent advances in knowledge in a number of fields related to science education, such as learning and cognition, management and leadership, ICT integration, and assessment have also provided educators with a much more diversified and sophisticated view of learning, instruction, teacher-student relationships in the classroom, and the nature



and purposes of assessment. This wider knowledge base for science education is also reflected in our broad-based approach. We have aimed to provide new science teachers with a slim book containing concrete detailed suggestions for implementing Canadian scientific literacy curricula, supported by a modest amount of theory. In keeping with the spirit of ICT (information and communication technology) integration, we have integrated information on this topic into appropriate sections of several chapters, rather than in a single section or chapter. Hopefully, preservice science teachers across Canada, as well as new and veteran teachers, will find value in the book.

**Keith Roscoe and
Rick Mrazek**

Astronomy Notes

This edition of Astronomy Notes is not the usual fare. I have decided to let you know about some of my favourite space-related websites. These few examples centre around NASA's own website. This place is a forest of information. At times I feel frustrated at the complexity of the whole operation. Most of the time, I stumble across wonderful resources. All of the ones in this article I've used in my classroom several times. Actually, now that I look over my notes, I realize that I use these resources in my Science 9 class. Part of the curricu-

lum asks students to investigate Space Exploration and the technology we use to understand the region beyond our atmosphere. I find it difficult to discuss with students topics like the International Space Station, the space shuttle or the Hubble space telescope without providing some historical context. Many students do not know about earlier space programs. NASA contains an excellent resource about its own history. The following three links take you to the pictures, summaries and movies about the Mercury, Gemini and Apollo programs:

- www-pao.ksc.nasa.gov/kscpao/history/mercury/mercury.htm

- www-pao.ksc.nasa.gov/kscpao/history/gemini/gemini.htm
- www-pao.ksc.nasa.gov/kscpao/history/apollo/apollo.htm

There are inevitably questions about the process of getting people to the moon. Students find it difficult to understand why our present technology is not sufficient. It is hard to appreciate the distances involved and the amount of resources that are required. Watching a movie like *Apollo 13* helps. Again, the students have difficulty visualizing the process of the command module docking to the lunar excursion module, which is also depicted in the movie. NASA supplies a nice little flash animation showing how the Saturn V program worked. It helps to clarify all the steps and shows why the shuttle is just not up to the task.

- <http://kids.msfc.nasa.gov/Rockets/Apollo-11/Animation.asp>

My absolute favourite addition to the NASA resources lets us Earth-bound mortals get an idea of what Neil Armstrong and the others saw when they did get to the Moon. With the help of modern technology, NASA and some partners have put together 360° panoramas of the moon using pictures taken 30 years ago. It takes some time to load but the scenery is breathtaking.

- www.panoramas.dk/fullscreen3/f29.html

The site also suggests that panoramas of Mars will be coming soon.

Derek Collins

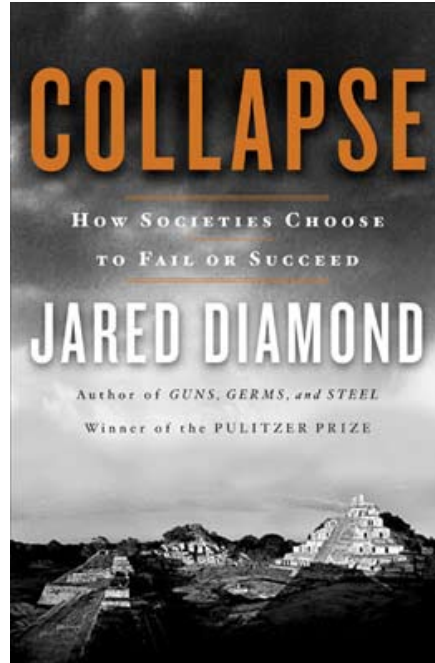


Book Review

Collapse: How Societies Choose to Fail or Succeed by Jared Diamond. New York: Penguin. ISBN 0670033375, \$30 hardcover.

I initially chose to read this book because it was featured on many non-fiction bestseller lists. A review in *Discover* magazine suggested that it was a must read for the summer. While I rarely follow such advice, I am pleased I did.

The book looks at historical societies and the reasons why they disappeared. The first ancient society that comes under Diamond's scrutiny is Easter Island. He ponders such questions as, "What were the islanders thinking when they cut down the last tree?" Easter Island was once covered in forest with nutrient-rich volcanic soil. Today, not a single tree is left and the top soil



has been eroded away. Environmental disaster is a common theme as he explains the collapse of the Anasazi of the southwest U.S. and the Viking colonies on Greenland, then moves to the modern examples of Rwanda, Haiti and Australia.

I was more surprised when I reached a section of the book that discussed successful societies. He uses the same criteria for explaining failures and successes. He compares Paupa New Gunea and Japan. The steps that these places have taken to protect their environment are remarkable. It must be noted that Japan's forests are growing in size but the cost is that the island country is importing its lumber, possibly contributing to deforestation on other parts of the world.

Collapse is a sobering book. Diamond makes the obvious connection between the current First World and Third World problems. As my wife and I ponder a "prosperity bonus" cheque from our provincial government while looking at heating costs, I worry for our own future. Diamond questions the widely held belief that protecting the environment has economic costs. Ignoring the environment can have bigger consequences. Are we like the Easter islanders? What will we think when we burn our last barrel of oil?

Derek Collins

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