The Alberta Science Teacher

Volume 33, Number 2 June 2014

Editor's Message

Builder spaces. Maker labs. STEM. Curriculum redesign. I've got a lot on my mind.

For many years I've been teaching science in a very hands-on way. I believe in the power of experimentation and social interaction that laboratory activities afford. I try to dissolve the boundaries between subject areas and disciplines—I see this as a way to connect learning in the classroom to the real world beyond the schoolyard. I see a reason to integrate outcomes from career and technology studies units into my science teaching, not because I am an eager drinker of the curriculum kool-aid mixed to celebrate the ministerial order on student learning, which says that students should "contribute to a strong and prosperous economy and society" (Yes! In that order!), but because I see how science, technology, society and environment (STSE) are intertwined. I believe in the "hackschooling" that rad-olescent Logan LaPlante talks about in his now-famous TED talk. (Haven't seen it? Take 12 minutes of PD time right now and google it).

Here we are on the edge of summer 2014. More snow is falling in the province as tornadoes ravage the southern US, as blue whales rot and bloat on the shores of Newfoundland, as two synthetic DNA base pairs are created in a lab and as scientists around the world discuss whether or not we (the human race) should make the woolly mammoth de-extinct. It's an interesting time with lots of questions that necessitate STSE discourse in education, politics and publications. Instead, we (the subjected masses ruled by those with real power) find ourselves surrounded by discussions of STEM (science, technology, engineering and mathematics). What happened to Society? What happened to the Environment? Are we so stoked on the prospect of Optimus Prime riding around on the dinobot Grimlock in this summer's fourth (and hopefully last) Transformers movie that we've totally forgot the simple and sincere message of *WALL-E*? Our future is not only a place of designer babies and smartphone cybernetics, it's also a place of fragile ecosystems and limited resources.

The STEM movement (which, in my opinion, is the prepubescent third-generation child of the top-down American curricular No Child Left Behind and the Common Core initiatives) places disproportionate value on the applied sciences outcomes of education. I applaud the pushback against this movement by those, like Calgary's Beakerhead group, who insist that we (forward-looking future-builders) consider including at least an A, for arts, in our bowl of STEM stew. It's not perfect, but STEAM is at least a soup that I'll cautiously sip until our curriculum overlords realize that quality education is more complex than a slogan or acronym.

There is some cool teaching and learning going on out there. In this issue I've tried to curate a number of possible STEAMy professional development opportunities and resources for you to try out over the summer before your triumphant return to the classroom in September. Read, explore and experiment this summer. The future hinges on your creativity.

Dan Grassick
Editor, Ranter, Scoundrel, Creator of Ninjarale

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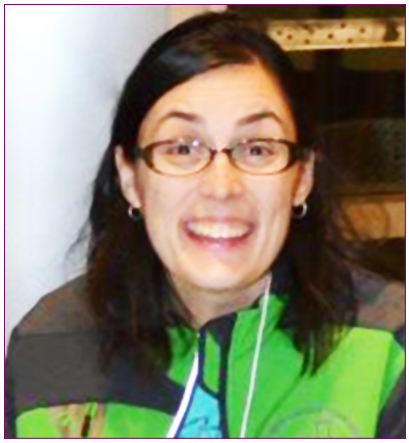


A Tale of Fire and Ice: From Texas to Greenland

I've been the president of the Science Council for over a year now, but it seems like it's only been a couple of weeks. My Grade 9 classroom has been continuously evolving as I introduce activities I've gained through professional development opportunities offered by our amazing council and others that I've been inspired to develop based on the awesome interactions I've had with science teachers, speakers and researchers.

If you ever get the chance, I strongly recommend that you attend a regional or annual conference offered by the National Science Teachers' Association (NSTA). I attended the NSTA conference in San Antonio, Texas, where a highlight was my explorations of the local ecosystems, including a visit to a vast underground cave network filled with centuries-old stalagmites and stalactites, and some above-ground park perambulating to check out the local flora and fauna.

This year I also explored the west coast of Greenland and the east coast of Baffin Island as a participant in a program organized by Geoff Green's Students on Ice expedition. I saw glaciers give birth to baby icebergs, some as large as mountains. I watched polar bears hunt and run across the ocean on chunks of ice barely large enough to support their weight. I experienced the trip of a lifetime, made some amazing new friends and learned a lot about one of Canada's most misunderstood and threatened areas. I was thrilled that Geoff was able to join us at our November ATA Science Council conference so that delegates could experience the passion that I felt every morning on our cruise through the far north.

If you missed our conference, you missed Rex Murphy shocking the crowd when he informed us that he had been a teacher at the beginning of his career. He shared his tremendous respect for all teachers and talked about their vital role as we look to an uncertain future. Astronaut Jeremy Hansen followed up his conference session from last year, but kicked it up a notch and delivered an incredible Saturday morning keynote about the relationship between humans, the earth and outer space, and the optimism he has when he meets Canadian students and talks about exploring the biosphere and beyond. In a tour-de-force closing keynote, renowned anthropologist Wade Davis impressed us all as he wove together incredible photographs and stories of cultures from around the world that sent us home amazed at how similar, yet different, humans can be.

Conference 2014 planning is well under way. At this point, we have the Banff Centre booked and our main keynote speaker will be Adam Savage from *Mythbusters*. We hope to see many of you in Banff, enjoying incredible professional development, from November 13 to 15, 2014.

Here's wishing you all the best in your teaching and professional development.

Rose Lapointe

Editor's Note:

If you're interested in following in Rose's footsteps to an NSTA conference or on a Students on Ice expedition, here are the links you need. Apply for PD funding and start filling out travel forms now!

NSTA conferences link www.nsta.org/conferences

There are multiple NSTA conferences coming up. If you are keen to present your work as a Canadian educator, speaker proposals need to be presented months in advance, but attending as a delegate can be done pretty last minute as early-onset-and-perpetual winter gets you down and you long for a trip south of the 49th parallel.

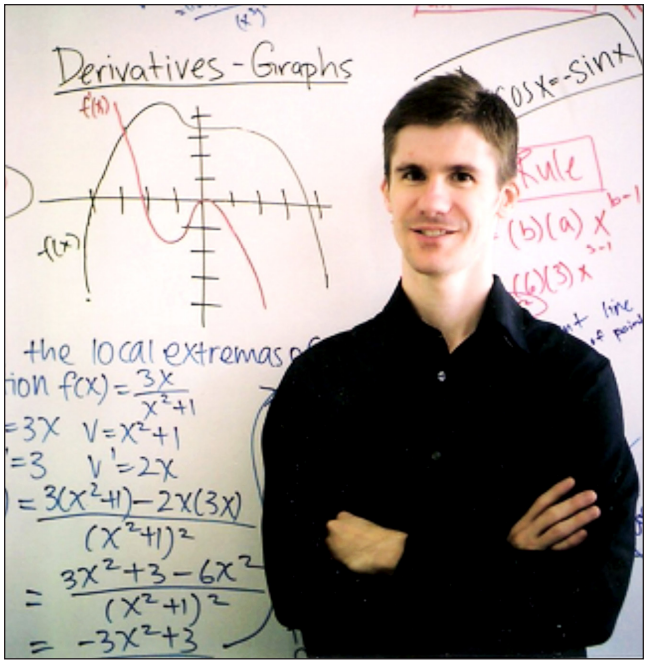
- Richmond, Virginia: October 16–18, 2014 (regional conference)
- Orlando, Florida: November 6–8, 2014 (regional conference)
- Long Beach, California: December 4–6 (regional conference)
- Chicago, Illinois: March 12–15, 2015 (annual conference)
- Minneapolis, Minnesota: May 20–23, 2015 (STEM forum and expo)

Students on Ice Expeditions www.studentsonice.com

The next two Students on Ice expeditions are filling up fast and payment deadlines are fast approaching, but you might still be able to get on board. Go to the Students on Ice website to see if there are spots available.

- Arctic youth expedition: July 9–24, 2014
- Antarctic youth and university expedition: December 26, 2014–January 8, 2015

Introducing the Science Council's President-Elect



Ian Doktor

He has an obsessive knowledge of space and the martial arts skills to handle problems on any away mission.

My name is Ian Doktor and I am excited to begin working with the Science Council executive as the incoming president. I have an eclectic teaching background that includes five years of teaching science and math in Alberta, three years in BC, two years in Hong Kong and one year in Mexico. In 2009, I completed a master of education at UBC; I continue to be a big proponent of the integration of technology in teaching. This diverse experience has led me to appreciate the quality of the science curriculum in Alberta and the amazingly innovative teachers here.

I am a passionate (bordering on obsessive) amateur astronomer and this past summer I finished building a small observatory in my backyard. Whenever the weather (and my wife) allow, I'll spend my evenings in the backcountry around Edmonton staring up at the sky. In addition to astronomy I've been involved in Taekwondo for about 15 years and hold a third-degree black belt. I've competed in several different countries, with mostly painful results.

This past July my wife and I celebrated the birth of our daughter, Ella, who now occupies the vast majority of my free time. I'm looking forward to working with the rest of the Science Council executive to continue to bring you world-class opportunities for learning and development.

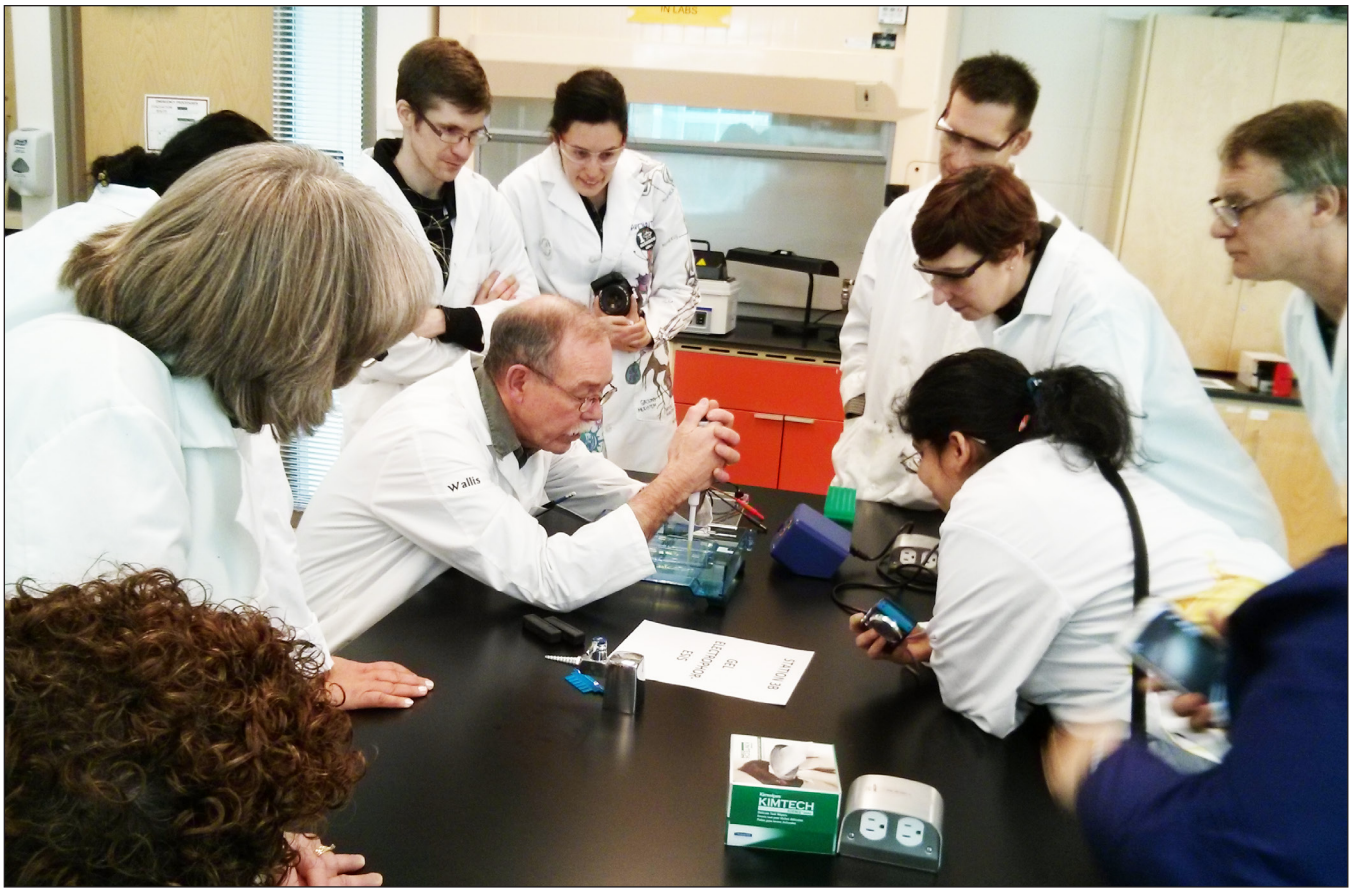
I hope to see you at our conference in Banff.

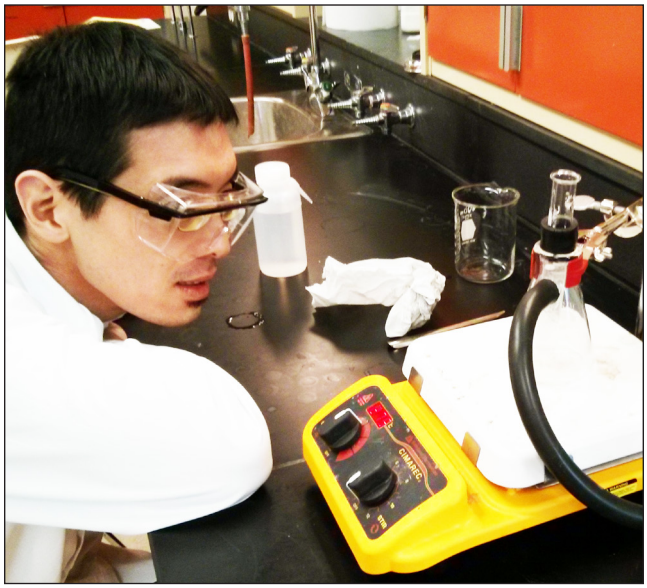
Ian Doktor

Chemical Reactions Disrupt Executive Meeting

On March 8, 2014, your ATA Science Council executive met in Medicine Hat for a strategic planning session and attended a lab workshop hosted by Brad Pavelich, who invited the executive into his lab classroom to learn to perform a caffeine extraction lab. This lab is one of several that he teaches to his own students in Chemistry 201 at Medicine Hat College. The executive members were able to extract caffeine from several everyday beverages such as coffee, tea and energy drinks. They learned lab techniques that used theories about solubility and bonding relevant to Chemistry 20. They will relate their experience to their students, perform their own labs or demos and highlight relevance to the everyday world.

In addition to the caffeine extraction lab, the executive members also performed a DNA extraction and analysis lab hosted by Peter Wallis. They extracted DNA from tomatoes and raspberries using household supplies such as salt, shampoo and rubbing alcohol. They also prepared other DNA samples for gel electrophoresis analysis. They gained hands-on experience and confidence





in their lab skills and will be able to more easily bring these labs to their junior high and Biology 30 classrooms.

The executive members were very pleased with the lab skills they gained that day and look forward to bringing new ideas into their classrooms.

Every year, new members of the executive are elected at the annual general meeting, which is a part of the Science Council conference. If you are passionate about learning and teaching science, contact the Science Council president at ATASCpresident@gmail.com to see which positions are becoming vacant in 2015.

Leon Lau

A Mythbuster, an Olympian and a Weatherman Walk into a Bar—
Popular Science: The 2014 ATA Science Council Conference

Welcome, teachers, exhibitors and sponsors!

We are looking forward to another great conference this year and hope that you are too. We're returning to the beautiful Banff Centre, in Banff, Alberta and have a great lineup of keynote speakers with a focus on popular science—the impact of popular culture on science and vice versa.

Early-bird registration is under way. Be one of the first 100 people to register to get great savings on your fees. We're also accepting speaker proposals. Speakers get a credit toward their conference costs. As you start to make plans for next year, why not consider a trip to Banff to share your favourite lesson or unit, connect and learn with colleagues from across the province, and rub elbows with a Mythbuster!

What: The 2014 ATA Science Council Conference

When: November 13–15, 2014

Where: The Banff Centre, Banff, Alberta

Who: You, Mythbuster Adam Savage and a few of your mutual friends

Why: Outstanding science education PD in the Rockies

How: Check out https://event-wizard.com/ATASCC2014/0/welcome/

Conference Schedule

This schedule is current as of the end of April. Please check online for updates and more details.

Thursday, November 13

- Evening: sign-in and hospitality lounge for attendees

Friday, November 14

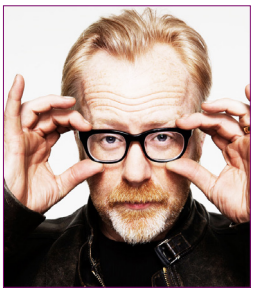
- Morning: Richard Zurawski (opening keynote) and workshops
- Afternoon: workshops
- Evening: Adam Kreek (keynote) and awards banquet

Saturday, November 15

- Morning: workshops
- Afternoon: workshops and Adam Savage (closing keynote)

Keynote Speakers

Adam Savage



Most commonly known for his role on *MythBusters*, Adam Savage has built and rigged prop sets and pieces for more than 150 commercials and has worked on special effects with George Lucas's Industrial Light Magic for such movies as *Star Wars*, Episodes 1 and 2, and *Terminator 3*. He has worked in the prop department for Disney and as a model shop supervisor for sequels to *The Matrix*. He has taught advanced model making and problem solving at

the Academy of Art College in San Francisco. As a Mythbuster, since the show's first airing in 2003, Adam has filmed more than 160 episodes, busted more than 750 myths and conducted more than 2,500 experiments.

Adam has been making his own toys since he was allowed to hold scissors. He's worked as a projectionist, animator, graphic designer, carpenter, interior and stage designer, toy designer, welder and scenic painter. He's worked with every material and in every medium fathomable and still works as a sculptor when his busy schedule allows. His work has been featured at more than 40 shows across the United States.

Today, in addition to cohosting *MythBusters*, Adam teaches, lectures and consults on a variety of topics to students, business folks and everyday Joes. He is excited to be coming to the mountains to talk about how his passions for art, design, technology and popular culture have all come slamming together.

Adam Kreek

An Olympic gold medallist, Adam has spent the last decade and a half teaching/using strategies for human performance, achievement and well-being. With his team at Kreek Speak Enterprises Inc, Adam has developed philosophies and psychological tools useful for the workplace, personal satisfaction and athletic achievement. In his rowing career, Adam has won more than 60 medals, 27 in international events, including 43 gold and first-place finishes, including at the Beijing Olympics.

In 2013 Adam set out with three Seattle men on the world's first unsupported rowing expedition from Africa to North America, gathering scientific data about our oceans along the way. At the edge of the Bermuda Triangle they were hit by a square wave and capsized. All four survived and were able to salvage their equipment and data. Since then they have educated youth across America about the importance of conserving our ocean's resources.

A geotechnical engineer and hydrologist by training, Adam helped build a biodiesel reactor and chairs the board of Greasecycle Inc, a Vancouver Island-based organization that collects and processes waste vegetable oil to produce sustainable biodiesel for local use. Also on the board of the Island Biodiesel Co-Op and the BC Biofuels Network, Adam helps small-scale biofuel producers achieve financial sustainability.

Richard Zurawski

A meteorologist, published author, independent producer, teacher, science communicator and public personality, Richard has published four popular books; produced, written and hosted numerous science and history documentaries; syndicated three children's television series; and is the on-air meteorologist in four of Rogers Radio Broadcast Group's markets.

Richard is in the dissertation year of his PhD studies in the Faculty of Education at Mount Saint Vincent University. He is examining the relationships between the media and science and what happens to science when it becomes "news." His efforts to popularize science and science education through the media extend to keynote engagements such as this one.

Currently Richard is working to address climate change and global warming deniers and the role the media has to play, both in misleading people and informing them, so that real change can occur.

More Information

For more information, to sign up as a presenter or exhibitor, or to register, please visit the conference event webpage at https://event-wizard.com/ATASCC2014/0/welcome/.

Derice Layher, Conference Director
derice.layheratasc2014@gmail.com

Beakerhead

For decades, we have been directing young people into either technical or creative streams, yet ingenuity lives precisely at their intersection.

When Beakerhead projects sprang up around Calgary last year, it seemed to the casual passerby that science, technology and art had suddenly collided in a very public way. Beakerhead has big plans for its second year and now is a great time for science teachers to look at the many ways to get involved.

Beakerhead's education programs are designed to educate students about science, technology, engineering and math by incorporating arts and culture. In other words, Beakerhead turns STEM (science, technology, engineering, math) education into STEAM, by incorporating *A* for art and design. Below are some of the programs that you and your student can be a part of.

Beakerhead Summer Intensive (Grades 10–12)

Now in its second year, the Beakerhead Summer Intensive is a three-week course presented in conjunction with the Calgary Board of Education. The unique program, which awards high school credits to participating students, is open to youth in Grades 10 to 12 in the public and separate school boards across Calgary and the surrounding six school districts.

A team of artists, engineers, scientists, machinists, designers and technologists mentor the students and help bring their design ideas to life. This rigorous and rewarding hands-on education initiative also makes the students' learning visible in an exciting and high-profile way by giving students the opportunity to interact with the public and publicly present their project as part of Beakerhead.

Course dates: July 2–24, 2014

Registration: Sign-up will be handled through the Calgary Board of Education. Check http://beakerhead.org for details.

Atomic 13 Ingenuity Challenge (All Grades)

Beakerhead's annual Ingenuity Challenge gives students a simple ingredient and a creative

science-themed challenge. Schools are presented with a specific challenge and are given five school days and all the materials necessary to collaboratively design and build creative projects based on a scientific concept or theme. While project materials might be highly specific, students will need to have unlimited creativity to overcome the challenge and build something enchanting.

At the end of the challenge, participants will be invited to share videos and photos of their final creations on the Beakerhead website. Projects will be adjudicated based on their creativity, conceptual idea and aesthetic presentation. The top three submissions will be awarded prizes by a panel of judges following Beakerhead.

Application deadline: June 30, 2014

Materials distributed: by September 5, 2014

Dates of challenge: September 8–12, 2014

Apply at: http://beakerhead.org

Beakerhead 2014 (all ages)

The second annual event takes place September 10–14 all around Calgary. Check out beakerhead.org to see what's in store.

Photo from Beakerhead.org

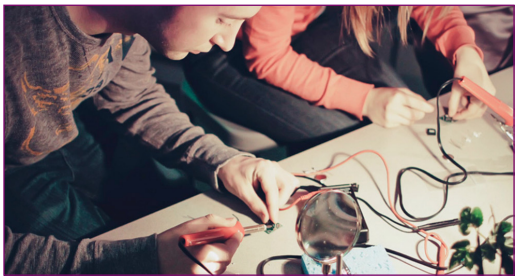
TELUS Spark Adults Only Nights

Offered in conjunction with TELUS Spark's Adults Only Nights, Beakerhead encourages teachers and the public to come down to Calgary's new science centre on the second Thursday of the month for fun and learning. From 6 to 10 PM, TELUS Spark is open only for adults to take part in the featured workshop and speaker series, explore the exhibits, and enjoy the live DJ and some light refreshments. Costs vary based on the theme and materials.

Register by calling TELUS Spark at 403-817-6800 now.

Soldering Skills—June 12, 2014

Learn the skills of soldering while making one of these two mischievous kits: a "Useless Box" (which cleverly turns itself off when you turn it on) or an "IR Jammer Kit" (which disables remote controls). You'll even get to take home a kit. Cost: $27 to $55, depending on your level of TELUS Spark membership.



Future of Food Production—July 10, 2014

The challenges we face in the 21st century of how food is produced for a rapidly growing population are daunting. Advances in technology have meant big changes for producers; as consumers, our relationship with agriculture is changing, with many of us now far removed from producers. If you could design a crop that would feed the world for less, would you? Join us for a night of envisioning the future of food production, from the local to the global. Cost: $19.95.

Exploring Imagination—August 14, 2014

Your brain is an amazing organ, full of memories and also constantly innovating. How does it all happen up there? Are there ways for us to become more creative? How does the physical structure of your brain translate into how you think about or solve problems? At this Adults Only Night we'll be celebrating grown-up imagination. Come and re-experience how incredible it is to make up games in the park!

Hack It—September 11, 2014

Humans have been hacking the world around us since we started making bones into tools. It's all about making something the way you want it, instead of the way it is. You may have already tried hacking electronics or toys, but what about hacking your life or your mood? Join us for a night of making things better by making them do the unexpected. You don't want to miss this Adults Only Night during the Beakerhead week!

Crime and Punishment—October 11, 2014

Forensic scientists are constantly innovating. DNA testing revolutionized the field. Every day, new techniques are being discovered to identify the previously undetectable. How we deal with criminals has also changed a lot—from grotesque medieval methods to today's modern prisons. Unleash your inner investigator with us tonight as you become a CSI, explore the psychology of criminal behaviour, and delve into the ways society has dealt with the "criminal element" throughout history.

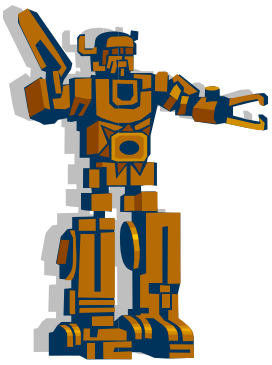
Edmonton Public Library's Makerspace

Ready, Set, Make!

The EPL Makerspace, located at the Stanley A Milner Library, is open during regular branch hours. The Makerspace offers incredible technology and equipment for the public to create with. Equipment such as 3-D printers, Espresso Book Machine, Mac and PC workstations loaded with design software of all types, digital conversion hardware, gaming consoles, and a green screen are all available to use in the Makerspace area. Staff are on hand to help you with your designing and making.

Makerspace Robotics—Lego Mindstorm

Every Saturday until June 28, from 1:30–3:30 PM
Drop in, no registration is required.



Do you love Lego? What about robots? If you answered "yes" to these questions, then you will love our Lego robots! Join us as we explore the world of Lego Mindstorm. Throughout this program we will learn how to build robots and program them with instructions to help them complete a variety of simple tasks.

3-D Printing—Simple Jewellery Design

Wednesday, June 4 from 2:00–3:30 PM
Online registration opened on May 21, 2014.

Jewellery lovers who want to design their own pieces or create 3-D models from existing designs—this session is for you. In this small group session for beginners, you'll use a computer and Tinkercad to design 3-D models such as earrings or necklace pendants. You'll learn how to use Tinkercad and receive tips on how to design a model that will print successfully in an additive printing process (like the one used by EPL's 3-D printers). Once you have completed your design, we can help you submit your model to be printed on EPL's 3-D printers.

MaKey MaKey Fun for Kids

Tuesday, July 15, from 2–3 PM
Drop in, no registration is required.

This program will bring out your inner inventor. Using a gizmo called a MaKey MaKey and a computer, you'll turn everyday objects into computer keys that control your keyboard. Hack a banana and turn it into a piano, design playdough video game controllers or create whatever else you can dream up.

Go to www.epl.ca/makerspace for more information.

Teaching Climate Change: An Interdisciplinary Approach

Summer Intensive Offered by the Biogeosciences Institute

Two years ago, I took a summer course at the University of Calgary's Biogeosciences Institute (formerly the Barrier Lake Field Station) in Kananaskis country. The goal of the program was to examine the relationship between current scientific research, educational research and classroom practice in climate change education.

We examined current interdisciplinary research on groundwater, glaciers, snow pack and water policies in Alberta by working with leading researchers in the field. We hiked up to glaciers with Shawn Marshall, one of the world's leading glaciologists. We had the pleasure of spending the week with recently retired Banff National Park superintendent Kevin Van Tighem, who reflected on the changes he'd seen in the park over his career. We discovered groundwater seeping out

2012 Teaching Climate Change particpants learning about Peyto Glacier from world-renowned glaciologist Shawn Marshall

of Silver Springs into the Bow River with Masaki Hayashi. Narcisse Blood, a Blackfoot elder, educator and director, shared his perspectives on the different sensibilities that are in conflict in Alberta and suggested ways to move forward with honour and care. We hiked into the hills of Kananaskis to poke the snow collection stations that John Pomeroy is using to determine the effects of forestry on streamflow and spring floods. On the topic of floods, Bob Sanford went where the talking heads on television and the Internet rarely go and connected the dots of climate change and human impact to the implications that we will see over the next century.

Since the end of the course, I have often heard our guest presenters speaking on the radio, picked up their books and exchanged e-mails with them and thought back to how lucky I was to hobnob with their like for the week. I have remained in close contact with most of the students in the course as well as with the outstanding professors.

One participant, Antonella Bell, the Emerald Award-winning founder of Green School at the Devonian Botanic Garden, near Edmonton, shared this poem at the end of our course as a reflection on her new understanding of water.

Source

How much I have seen in my life!
Once upon a time
I filled this valley
Almost to the top.
Only a few stray peaks
Escaped my far-reaching grasp.

Some years were good
And I added to my mass.
But many, many more were lean
And the relentless warming
Slowly carved its way across my body.

Now the writing is in the wash
My end is near.
Interesting to think
That what I have given of myself
Now as throughout
Has sustained so much other life.

Such is the law …
With the exception of one.

What will my passing mean?
What will happen to this beautiful valley?
Who then will provide the source …

My own reflection was different and was based on something mentioned by many of our esteemed speakers, including Narcisse, John and Kevin. Each had lamented the loss of the bison. Only now are we beginning to understand the critical niche the bison filled in the plains and forests of this vast province. In my reflection I juxtaposed Wall Street's bull statue and a lone plains bison and shared the preposterous false dichotomy that is always thrust on us: that economy must trump ecology.

Teachers can register for this summer course through the University of Calgary or the University of Alberta, either for credit (towards undergraduate and graduate work) or as an open student. Please contact the instructors for more details.

Dates: July 6–12, 2014

Instructors: Susan Barker and Michael Mappin

Contact: susan.barker@ualberta.ca and mmappin@ucalgary.ca

Costs: Tuition and other fees apply for credit and noncredit students. Additional costs include meals, accommodation and travel during the course ($475 + GST). Cost of travel to and from Kananaskis is the responsibility of the student.

Dan Grassick

Summer Marine Science Institute on the East Coast

Huntsman Marine Science Centre, St Andrews, New Brunswick

All Things Marine—A Cross-Curricula Maritime Institute

There is no better outdoor marine classroom than Canada's own Bay of Fundy. Twice a day, the tide at the mouth of the bay rises and falls eight metres, stirring up nutrients that have settled on the ocean floor. This nutrient-rich and dynamic environment is the site of one of Canada's coolest summer professional development experiences for teachers. Put on your sunscreen and galoshes and take part in a one-week exploration of this ruggedly beautiful marine environment.

This summer, from July 14–18, the Huntsman Marine Science Centre, in St Andrews, New Brunswick, is offering All Things Marine, a cross-curricula maritime institute open to teachers and their friends. What we catch and collect in the Bay of Fundy each day is what we will study!

The all-inclusive course fee of $670 includes four nights' dorm accommodations, meals, boat and lab fees, admissions, and taxes. You need only to find your way to the Huntsman in St Andrews.

For more information and to apply, visit www.huntsmanmarine.ca or call (506) 529-1200. Your application form must be accompanied by a $250 nonrefundable deposit. Registration must be received one month prior to the course start date. Late registration may be accepted if space is available.

Flipping the Science Classroom

Session Review from the 2013 ATA Science Council Conference

Having read about the theory of flipped classrooms in the *ATA Magazine* last year, I was curious to see what Carol Brown (teacher/grad student, U of A), Norma Nocente (researcher, U of A) and Ben Oswald (teacher, Edmonton Public) had to say about the practical side of the practice in their session, titled "Flipping the Science Classroom." Also known as an *inverted classroom*, the flipped classroom is an alternative teaching model intended to increase time for student exploration and practice in class and to augment student–teacher time for effective support.

Traditional Model	**vs**	**Flipped or Inverted Model**
Lecture in class (20–30 minutes)		Lecture at home (via video, day before)
Practice at home (depends on student)		Practice in class (duration of class)

While classroom flipping is relatively new, Carol and Norma have identified several major advantages to the practice. Although experienced teachers tend to be the ones trying this out, flipping as a model shows a great deal of potential. It moves the class toward asynchronous teaching (in which everyone is at different places at different times), allows teachers to reflect on their own practice (by focusing on critical facts and examples in the videos and effectively being able to watch themselves teach) and allows for better differentiation in inclusive and large classes, ultimately providing more opportunities for in-class focus on problem solving, lab work, group activities and alternative pedagogies.

Downsides include a lack of self-motivation that students may have in watching the lectures or attempting to understand them—because the videos are still homework. Furthermore, students can be easily distracted at home when observing lectures. Notably, some students enjoy being able to pause and go at their own pace, while others are frustrated that they cannot ask their questions ad hoc.

It was beneficial to have a teacher present his experiences with the flipped classroom model and answer the questions of attending teachers. Over the last three years at Ross Shepherd High School, Ben has developed video lessons and engaging in-class activities for his physics students. While emphasizing that this is a work in progress, Ben attests that student buy-in was immediate, that he has improved by watching himself teach and that, while he occasionally misses the lecture-style opportunities to share his jokes and stories (since the videos tend to be limited to eight minutes per lesson), he does enjoy the increased student–teacher time it affords him.

If your class is increasing in size or complexity, if you are having difficulty getting to all of your students in class, or if you want to make more time in your day for activities, why don't you give flipping a shot? Start with one class and see how it goes.

Ania Ossowska

Science Council Executive 2013/14

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The Alberta Science Teacher is one of the official publications of the Science Council (SC) of the Alberta Teachers' Association. SC Bylaw 9.4 states: *The Alberta Science Teacher* shall reflect on the contributions and activities of Alberta science teachers in the classroom.

ISSN 0229-3099

Please address all correspondence to the editor, Dan Grassick, at danielgrassick@gmail.com. All manuscripts should be submitted electronically in Microsoft Word format. Pictures or illustrations should be clearly labelled and placed where you want them to appear in the article. A caption and photo credit should accompany each photograph.

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