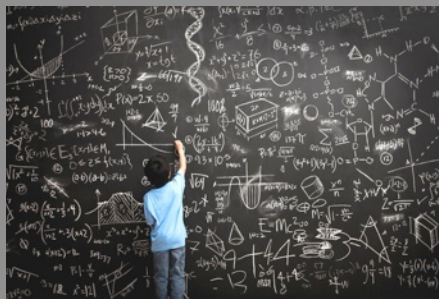


The TISP Canada Courier #7



October 15, 2013

Is a “Virtual High School” real?

TISP champion and *TISP Canada Courier* veteran reporter David Hepburn is exploring this intriguing question after a recent chance encounter on Main Street in Bayfield, Ontario.

During a recent visit to the small lake-side town of Bayfield, Ontario, Dave Hepburn visited a newly-opened building opposite his hotel. As will be seen from the photo (page 3, top left), its sign proclaims: “Virtual High School.” Intrigued, Dave dropped in and met with some of the staff. Here is a brief account of the conversation.

This school is privately owned and has been in business for 15 years. However, the building in Bayfield is new, having been opened in 2012.

The school currently employs about 90 teachers, up from 75 last year. As the photo would suggest, the building cannot accommodate anywhere near those numbers; the actual teachers work from home. The Bayfield building houses about 20 staff, who are concerned with maintaining the currency of the curriculum, plus accounting and other administrative work.

The school offers high school level courses on the Internet, on a no-pass, no-fee basis. The fee for each course is \$499. Their curriculum is approved by the Ontario Ministry of Education, and their teachers are Ontario licensed.

The current curriculum comprises 65 “courses”, mostly addressing general high school subjects, such as history, geography, math, etc., none of which have any direct relevance to what our TISP

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TISP Reports from the Regions

TISP-Canada relies on active participation from all regions of the country. These columns report on recent work and upcoming events as well as trials and accomplishments of TISP volunteers across the country.

Alberta

On September 10, 2013 Anis Haque and Kartikeya Murari organized an event at Cremona School, a K-12 facility in Cremona, Alberta, in cooperation with the school's teachers and the Association for the Advancement of Science and Engineering Education (AASEE). They prepared the *tryengineering.org* "Ship the Chip" activity for two groups of altogether 47 Grade 7 and Grade 8 students and spent close to 90 minutes with each group, including time for introductions, the "Ship the Chip" activity itself, and discussions. The students enjoyed themselves and had some interesting designs come out of the activity. This was Kartik's first TISP event, and he learned quite a bit from his veteran TISP colleague Anis as they were jointly working with the students and their teachers.

For further information contact TISP Champion Kartikeya Murari at kmurari@ucalgary.ca.

Ontario

TISP champions of the London (Ontario) Section, in conjunction with the Professional Engineers of Ontario, are planning student activities at five elementary schools. The theme is "Building Dams." Members of the Section are also preparing a video on electrical engineering with Virtual Researcher On Call (VROC), with permission for on-site videoing still pending.

For information contact TISP Champion Murray MacDonald at murraymacdonald@ieee.org.

Manitoba

IEEE and TISP Champion Witold Kinsner, his colleagues Dario Schor and Shaahin Filizadeh at

the University of Manitoba, and other engineering and learning institutions in the Province organized another popular "Space Camp" in Winnipeg during the month of September. The camp has been held for a number of years now with great success and strong support from the local engineering community.

Earlier this summer the TISP group, under Witold's leadership, completed another program with aboriginal students; more than 150 participated.

Looking ahead, the Winnipeg Section is already planning to stage "Engineering Month" events in 2014.

For further information on the various activities contact TISP Champion Witold Kinsner of the University of Manitoba at kinsner@ee.umanitoba.ca.



TISP Champion Kartik Murari engages Grade 7 and 8 students in "Ship the Chip" activities at Cremona School in Alberta..

Photo credit: Anis Haque

Photo credit: David Hepburn



Built in 2012, this is the real home of the “Virtual High School” on Main Street in Bayfield, Ontario.

(Virtual High School, continued from page 1)

program offers. However, there are several courses titled “Science”, and the school may be enlarging its offerings in this area as part of a planned expansion. It should also be recognized that when the school uses the term “course” that means the equivalent of a full eight-month school year. So the VHS is indeed a busy place, and maybe some courses could even take advantage of any of the 114 lesson plans that *TryEngineering.org* has on offer.

Enrolment includes registrants from numerous foreign countries and also Canadian students who wish to upgrade or supplement their high school standings by adding additional courses. Dave was advised that the VHS is represented at the annual meetings of the Science Teachers’ Association of Ontario (STAO), and in fact gave a presentation there last year, entitled “*Virtual Science – Real Learning*”, which seems appropriate.


While both of the two VHS staff Dave spoke to had vaguely heard of the IEEE, neither had ever heard of our TISP program or the *TryEngineering.org*

Photo credit: Virtual High School



The Virtual High School is administered by a staff of around 20 professionals, pictured here within their brand-new facility.

web site. They were genuinely interested, because the school is always seeking areas into which it can expand. As a high school, they currently only cover Grades 9 to 12, but have plans to go down a couple of grades, to maybe Grade 6. So when Dave told them that we had 115 general science lessons available *free*, they became very interested. It was agreed that we would meet again in mid-November at STAO 2013 where TISP and VHS have booths.

Dave is also conferring with the VHS and Gerrie Storr, the past president of STAO, on two seeming conundrums: (a) how does the school know that the person sending in the class work is really the student (unaided); and (b) how do they invigilate the exams? However, as Dave points out, they’ve been in business for 15 years and are approved by the Ontario Government. Stay tuned. 

The Virtual High School can be found on the Internet at www.virtualhighschool.com, or on 27 Main Street N, Bayfield, Ontario, N0M 1G0. For further information on this article contact David Hepburn at dehepburn@sympatico.ca.

Next time try Ask-an-Expert at tryengineering.org

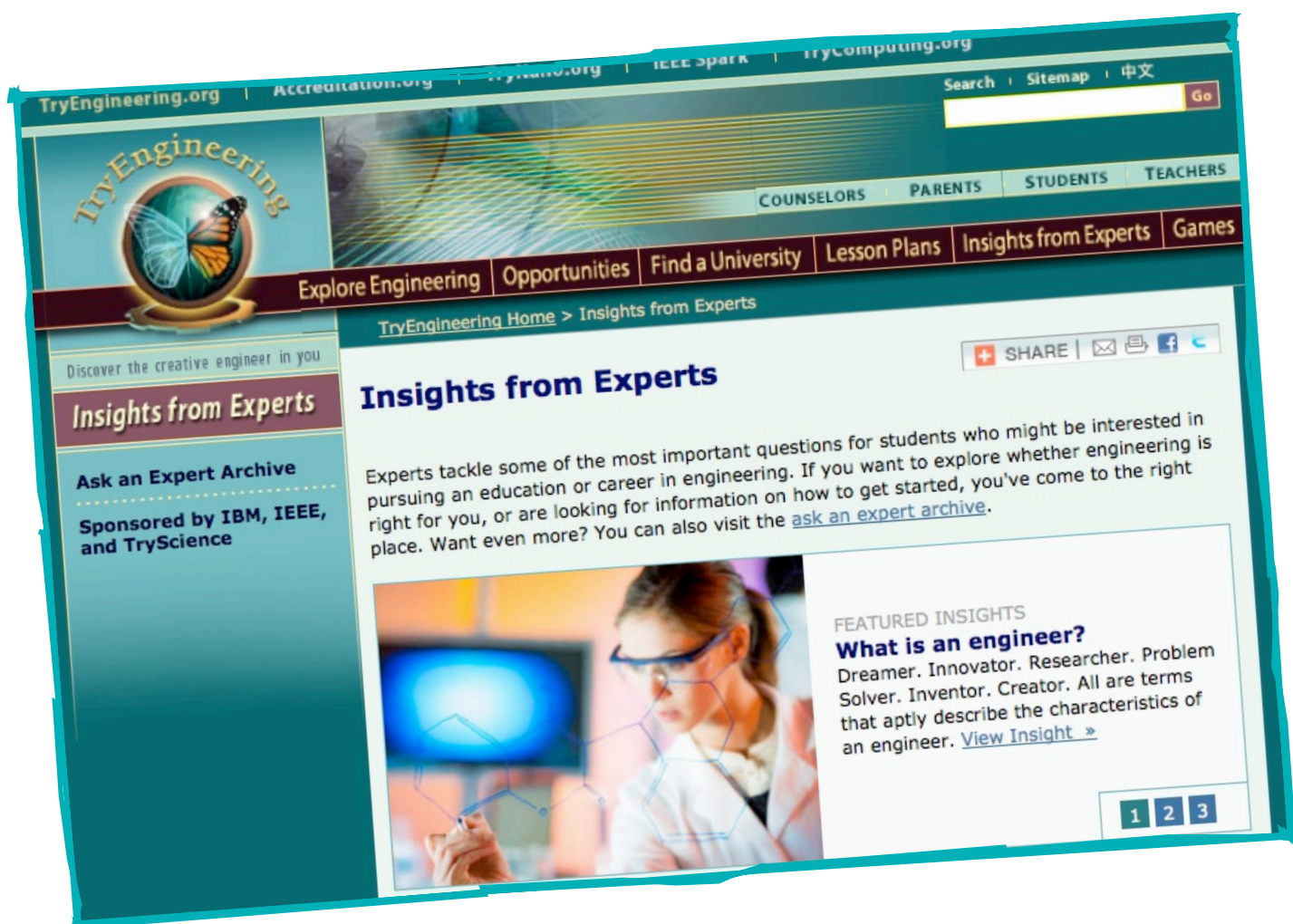
Insights from the experts offers answers to a lot of questions that budding engineering students may have for them. Be sure to check the helpful archive as well as other opportunities at this site!

TryEngineering.org is the online engineering education resource for pre-university students, teachers, parents, and school counselors around the world. Aside from an impressive archive of 114 lesson plans, the website also features many other opportunities to explore engineering. For example, take *Insights from Experts*.

A recent installment of *Insights from Experts* highlights the question *What is an engineer?* As an engineer you might develop the next generation of the iPad, or a medical device that will help doctors

treat an illness, or a spacecraft that will carry humans to Mars, or a system that can bring clean water to an underdeveloped region, or a new power source that is sustainable and provides clean energy, or a device that can detect toxic agents and chemicals, or a new building that is earthquake safe.

To learn more, explore TryEngineering resources to find out about *Engineering majors*, *Engineering technology majors*, and news items under *TryEngineering Today!*



A high school student encounter with TRIUMF

TISP-Canada champion Tanaya Guha and her colleagues in Vancouver organized a field trip for high school students to the national lab of subatomic physics. Here is Tanaya's report.

Earlier this year, Roya, Yifei and I from the Women in Engineering (WIE) Affinity Group of IEEE Canada's Vancouver Section organized an exciting engineering field trip for 29 Grade 12 students of Vancouver's University Hill Secondary School. Our destination was one of the world's leading subatomic physics laboratories: TRIUMF, the Canadian lab for particle and nuclear physics.

Our day started at 10 a.m., when we accompanied the students and their physics teacher, Vincent Tang, to the lab in Vancouver. At TRIUMF engineer and WIE supporter Aurelia Laxdal welcomed us and gave a brief talk on engineering in general. She also gave an interesting overview of her own research on electrons.

Then our tour guides explained the exciting work that is being carried out at TRIUMF and outlined the various applications in physics, chemistry, engineering and health science. The students were

very impressed. They saw a display demonstrating the birth and almost instant death of sub-atomic particles and a large electro-magnet that is part of large particle accelerators.

During the tour we had brief informal discussions with the students regarding their career plans. To our pleasant surprise we found that eight girls were willing to consider studying science or engineering once they enter university.

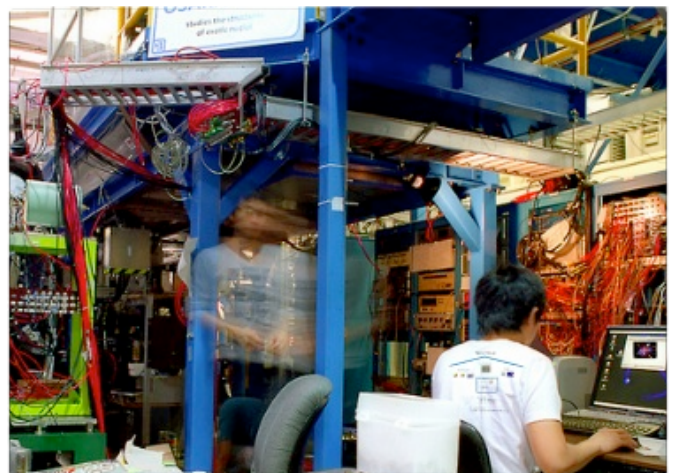
Our tour came to an end at 12.30 p.m. We were all relieved to find out that the meter reading indicating our level of exposure to radioactivity did not change one bit during our stay. ☒

For more detailed information visit TRIUMF at www.triumf.ca. TRIUMF offers outreach programs for high school students, teachers, and the general public. For information on the field trip contact Tanaya Guha at tanayaguha@gmail.com.

Photo credit: Tanaya Guha



Students from Vancouver's University Hill Secondary School and their teacher pose for a group photo at the TRIUMF lab.



Not unlike those in science fiction movies, the high-tech control panels within the lab made a great impression on the students.

Photo credit: TRIUMF

Igniting students' minds at SPARK conference

TISP Canada Courier co-editor Murray MacDonald reports on his experience at this year's SPARK conference of the Thames Valley District School Board in London, Ontario.

In April this year, I was approached by Melissa (Mel) Gollan-Wills from the Thames Valley District School Board (TVDSB) to participate in a SPARK conference. This event took place at Saunders Secondary School on May 24, 2013.

SPARK stands for "*Specialized Programming Activating Rich Kinds of Experiences and Discoveries*". It is a conference for gifted students and "enhanced" programs, involving several schools with the intention of exposing the students to opportunities beyond the classroom.

The topic was "*Engineering*", and Mel was expecting 80-100 students from different high schools. A plan was developed to first show a presentation about engineering in general, followed by activities focused on engineering. Mel suggested an environmental or energy focus due to interest in existing programs.

Based on the previous success at different schools, we chose two activities: "Building an Irrigation System" and "Building a Transformer", with discussions on transmission and efficiency. Both activities originate from the Institute of Electrical and Electronic Engineers sponsored website www.tryengineering.org.

To compensate for my EE training and complete lack of knowledge on irrigation (water does go down hill?), I enlisted the assistance of a member of the local Professional Engineers of Ontario (PEO) chapter who I had worked with on an elementary program previously – Adriana Csiba, P.Eng. Adriana is a Civil Engineer with a strong background in hydraulics. The transformer

activity was actually developed and submitted to *Tryengineering.org* by Dave Hepburn, TISP guru from the Hamilton Section, and was debuted at last fall's conference of the Science Teachers' Association of Ontario (see *TISP Courier* #2).

After Mel introduced Adriana and me, I gave a presentation on "*Take a Look at Engineering*" that included a short video with the same title. The video is available at http://members.peo.on.ca/index.cfm/ci_id/58584/la_id/1.htm. This was followed by the irrigation system activity.

Adriana had an initial presentation about irrigation systems in general, and the students were challenged to build and test a simplified irrigation model consisting of a reservoir and piping system from material provided by PEO. The methodology, procedure, and a form for experiment measurements were prepared by Adriana in advance to fit into the timeline. Students were enthusiastic and did a great job by



Murray's presentation at the SPARK meeting included this video which is accessible on the Internet (see text for URL.)

finishing and testing their irrigation systems on time (without spilling a lot of water!)

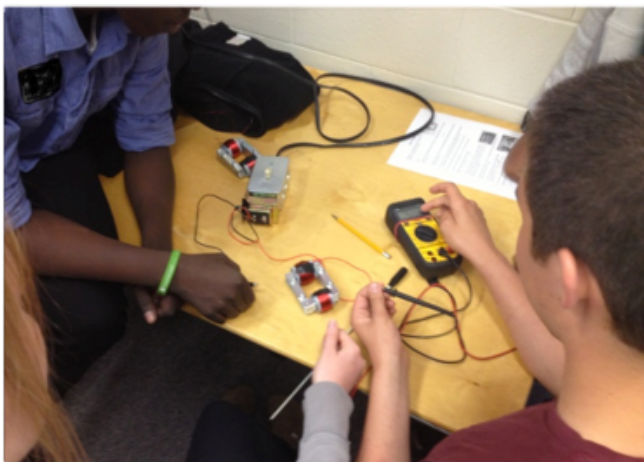
After lunch I gave a short presentation on the theory and applications of transformers. Working in teams, the students assembled and tested a simple transformer using steel shelf brackets as laminations. Again, the students were enthusiastic and demonstrated effective teamwork.

At the end of the day I answered many questions. The students were impressed by the range of engineering roles available, and perhaps some were encouraged to consider a future in engineering. Despite the numbers being lower than expected (due to conflicts with year-end athletics and trips), this initiative was a great success.

Mel wrote an appreciation letter with the words: *"It was truly an innovative and inspiring event, and we are so grateful to have fostered this wonderful partnership with the IEEE and PEO"*. We are planning a repeat in the upcoming school year. 📧

For further information on SPARK make contact with Murray at murraymacdonald@ieee.org.

Photo credit: Murray MacDonald



Students conduct a transformer experiment under Murray's supervision. There was reportedly no SPARK flying here!

Teachers' Corner

Finding funding has helped teachers in BC

Mark Isaak, TISP Champion in British Columbia, was curious about a recent education grant that was awarded in School District 33 in Chilliwack, BC. For a brief interview he contacted Justin Moore who is a "Helping" teacher for science and math at a junior high school in that district.

Mark: You were instrumental in obtaining funding through the Mitchell Odyssey Grant Program in British Columbia. How did this help your teaching program in science and math?

Justin: The funds allowed us to conduct field trips and to purchase much-needed equipment. Science funding within the school district seems to fly under the radar. So the grant allowed us to engage students in more science activities. It made students aware of job opportunities in science. Science is seen as something that comes from a school book. Students compartmentalize "school" learning and "outside" learning. It is important that "outside" and "inside" come together.

Mark: Do you see any issues with the way science and math are taught at the moment?

Justin: Most approaches to teaching science and math involve checking boxes on the curriculum. However, there does seem to be a commitment to change with new curricula. For instance, with the funds from the grant we could conduct more open-ended experiments that may or may not work out. Science teaching rewards the "right" answer to a set sequence of steps. We could also reward the process of trying something new and coming up with reasons for its success or its failure. 📧

For further information contact TISP champion Mark Isaak at m.f.isaak@gmail.com.

Some guidelines for contributors

Articles and news items are welcome and should be sent via email to the Editors.

The *TISP Canada Courier* accepts feature articles up to a length of 1000 words with suitable illustration material. Smaller news items should not exceed 500 words in length. Notices for upcoming events should be submitted in a timely fashion keeping in mind the quarterly publication schedule of the Newsletter.

Although the editors will usually consult with contributors regarding any significant change to material submitted, the *TISP Canada Courier* reserves the right to publish such material with any change(s) necessary to meet space requirements, or as otherwise deemed necessary.

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The editorial content of this newsletter does not represent official positions of the IEEE or its organizational units.



IEEE and TISP

The Teacher In-Service Program provides a forum for IEEE volunteers to demonstrate engineering, science and mathematics concepts by sharing their real-world experiences with local pre-university educators. IEEE offers workshops for its volunteers on how to provide in-service programs.

Part of the IEEE mandate is to address declining interest of students in engineering. IEEE needs to help raise everybody's awareness of technology. The "TryEngineering" initiative involves IEEE, IBM and the New York Hall of Science. To-date, **TryEngineering.org** lesson plans have been downloaded more than 3 million times. The site has various great features, including a search for accredited university and college programs in many countries, including Canada. Portals on **TryComputing.org** and **TryNano.org** have also been launched.

More information is available at www.ieee.org/education_careers/education/preuniversity/tispt