

# The TISP Canada Courier #16



August 15, 2019

## Math Kangaroo Contest is Skipping Across Canada

TISP Canada champions Rossitza Marinova and Mooney Sherman of IEEE's Northern Canada Section are among the key organizers. They report on their preparations, successes and plans.

As volunteers of IEEE's Northern Canada Section we have organized many mathematics clubs for Grades 1 to 9 students. The activities offer math enrichment and prepare students for national and international competitions. The Canadian Math Kangaroo Contest is an outstanding example. The purpose of the classes is to meet the educational needs of students who require math challenges

beyond the regular school curriculum. In February we hosted a series of IEEE TISP coding and engineering workshops. The workshops were attended by approximately 120 students. We were assisted by eight volunteers from our Section.

The actual Math Kangaroo Contest this year took place on March 18. Concordia University of Edmonton and MacEwan University welcomed 370 students in Grades 1 to 12 from the Edmonton area who participated in the international Mathematical Kangaroo contest-game. Concordia University of Edmonton and MacEwan University worked together very closely in running the contest and providing training.

The Math Kangaroo competition is one of the largest in the world. It attracts over six million students and hundreds of mathematicians from more than 70 countries. The main purpose is to dispel the myth that mathematics is boring. The opposite is the case. We are creating a positive

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## TISP Reports from the Regions

These columns summarize recent work, upcoming events as well as trials and accomplishments of TISP volunteers from across Canada.

### IEEE Canada Education Activities

IEEE Canada now has an active Education Activities Committee. The Committee held its first meeting last May. The new IEEE Region 7 (Canada) Education Activities chair is Rossitza Marinova of Edmonton, AB; vice-chair is Bob Gill of Vancouver, BC. Rossitza and Bob are joined during their regular teleconferences by education

representatives from Sections across Canada. Their work plan includes exciting activities and opportunities for the next year. Stay tuned!

For information – plus copy of the detailed Education Activities *Volunteer Manual* – contact Rossitza at [marinova@ieee.org](mailto:marinova@ieee.org).

### Ontario

TISP champion Satish Saini from the IEEE Toronto Section made some exciting progress on the TISP front in the Greater Toronto Area. He has met with representatives from the Peel Region School Board interested in developing some unique hands-on type courses in accordance with Ontario’s school curriculum.

Potential topics for Grades 3 to 8 include hydro-electric power, solar power, wind power, light and sound, and bridge building. The group is looking for lesson plans and hands-on working models. Plans for site visits to related facilities are in the works. According to Satish, the officials are very excited by IEEE’s capabilities and the innovative plans from the TISP side. The team is looking at the next steps to move forward. As TISP volunteers we can customize activities to their specific requirements.

For further information contact Satish at [s.saini@ieee.org](mailto:s.saini@ieee.org)

### Nova Scotia

TISP-Canada, with support from the IEEE’s Canadian Atlantic Section, is organizing a STEM Education Workshop as part of the Canadian Women in Engineering (WIE) International Leadership Summit in Halifax, on October 19, 2019. The workshop is geared toward teachers and aspiring volunteers and STEM ‘ambassadors’ among members of WIE and Young Professionals in the region.

For information contact Dirk Werle at [dwerle@ca.inter.net](mailto:dwerle@ca.inter.net)

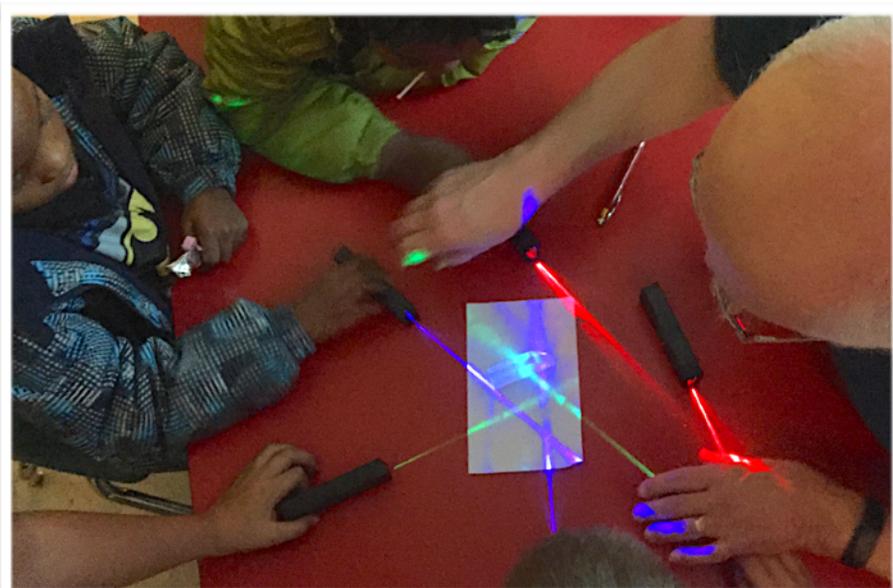


Photo Wolf Lutscher

*Experimenting with Light* was one of the activities during the Christie Lake Kids program for economically disadvantaged children. See the following pages for details.

## Christie Lake Kids and Ottawa TISP Collaboration

In this full-length feature, TISP champion Wolfram Lunscher reports on a highly successful multi-year venture of volunteers involving the IEEE's Ottawa Section and TISP-Canada.

Since 1922 Christie Lake Kids has served economically disadvantaged children in the Ottawa area by providing recreation and skill-building programs at no cost, and with all barriers to participation removed. The organization takes its name from the location of its summer camp, created by founder Judge John F. McKinley. From fall through spring, Christie Lake Kids, or CLK for short, also delivers many different youth programs inside several Ottawa community centres ([www.christielakekids.com](http://www.christielakekids.com)).

Former IEEE Ottawa Section Chair Janet Davis reached out to Christie Lake Kids in 2014 with the objective of initiating a collaboration to use TISP-Canada expertise and resources to promote STEM activities among their youth. To that end, in December of that year, the Ottawa Section and Christie Lake Kids entered into a memorandum of understanding “*to increase the visibility of science and engineering topics in the CLK programs by encouraging and promoting IEEE resources as part of the CLK programming,*” where “*each organization will work collaboratively to work with children to increase their interest in Science and Engineering.*” This MOU kicked off a regular collaboration between IEEE and CLK. It has been running continuously for almost 5 years now.

The first youth workshops were held at the Dempsey Community Centre near the Canada Science and Technology Museum in Ottawa on February 10 and 17 of 2015. We did the *Rubber-Band Racers* lesson plan from [tryengineering.org](http://tryengineering.org). This kick-off event was very well attended. Janet Davis, Raed Abdullah, Dmitry Klishch and myself

represented IEEE. Several CLK directors and about 20 youth aged 13 to 17 participated. By the end of the sessions – and fuelled by much enthusiasm from the kids – we had a number of racers if not exactly racing but at least rolling along the track toward the finish line.

The next workshop series took place over 3 nights in February of 2016. The participants were encouraged to build creative gum-ball machines. About 15 young people ranging in age from 13 to 17 created a remarkable variety of brightly decorated machines. Toward the end of the session we brought in some elementary school children from a concurrent class in the building to try out the gum-ball machines. Gum-balls provided by IEEE – that was a lot of fun for creators and consumers alike!

In 2017 things picked up considerably. I ran a robotic arm workshop with two other local IEEE volunteers over two evenings in April. We were joined by eight young kids, about 8 to 12 years of age. After a quick presentation on how robot arms are used in industry, the kids quickly embraced the idea of creating arms and hands with cardboard and string. Some designs turned out more practical than others, but the exercise got them all thinking about mechanical design.

We then ran three summer camp workshops in July and August. By this time Janet led a complementary *Ciena Cares* initiative with her employer, where Ciena grants its employees time off to pursue community service projects. I chose the [tryengineering.org](http://tryengineering.org) *Water Filtration* lesson



Photo credit: Wolf Lutscher

Group photo of happy participants of the Christie Lake Kids summer camp workshop with IEEE TISP Champions Janet Davis (at right), and Maxwell Donodo, Patrick Finnigan and Wolfram Lunscher (background, centre right).

### Christie Lake Kids (continued from page 3)

plan. It complemented the wilderness summer camp location rather well. Maxwell Donodo of IEEE Ottawa and Patrick Finnigan, a fellow TISP champion with a cottage nearby, provided valuable assistance. The story of this camp workshop was presented in Issue #15 of the *TISP Canada Courier* in December of 2017. Other groups of IEEE and Ciena volunteers lead a session using electronic Snap Circuits to build radios, and they introduced photonics, including a solar oven, to bake s'mores. In total, there were about 56 youths of high school age; they were assigned to three workshop teams.

In the fall, back inside the Dempsey Community Centre, we performed the Engineering Ups and Downs lesson plan on three occasions before about eight youth aged 8 to 12. The children constructed a cardboard elevator to lift a toy car within a parkade of their own design. Among other things, this taught the principle of mechanical advantage as provided by pulleys. This was complemented by a brief presentation about the history of elevators dating back to the Roman Empire.

Things got even busier in 2018. In the winter, inspired by the PyeongChang winter Olympics, I ran a Chairlift lesson plan workshop over three evenings. Janet and some Ciena colleagues assisted, and many of the same kids from the fall were participating. Most of these children had never seen a ski hill, let alone been on a chairlift. The activity became a fun adventure for all of us. After a slide show to set the context of what chair lifts are and how they work, the kids jumped into creating lifts from string, popsicle sticks, plastic plates and cardboard. Winter Olympics never looked so good!

Come springtime, Janet and I ran eight workshops together with Maxwell Donodo and Ciena volunteers before much the same group as in the winter. We covered a variety of lessons on robotics, electronics, rocketry and flight. NASA provides an excellent lesson plan using water + Alka-Seltzer as fuel for a small "pop rocket" that might rise a meter, sometimes two, above a table-top to shouts of glee from the audience.

At the summer camp we again ran 3 workshops during July and August. This time we tried the Ship the Chip lesson plan about robust packaging. The prospect of edibles proved to be enticing! The other two stations again did electronics and photonics. Janet brought Ciena volunteers, and I, once again, had Maxwell Donodo and Patrick Finnigan helping out. Every summer it's a new set of about 50 high-school-age students.

In the fall, we were invited to a new CLK location at the Bellevue Community Centre, which is more centrally located than Dempsey. Our program unfolded over the duration of nine evenings. Janet, another Ciena volunteer, Maxwell, and myself covered a number of topics, including Rocketry (pop rockets), Astronomy (constructing and launching a comet across a representative model of our solar system), Circuits, Photonics, and Parachutes. Less youth were involved at this location, as only eight participants signed up, aged 8 to 12. Inadvertently, this provided the children the benefit of essentially one-on-one mentoring.

#### **Math Kangaroo** *(continued from page 3)*

environment with fun events that emphasize the practical nature of mathematics. Problems are created to be attractive, entertaining and appealing to the students. Yet, the challenges are rich in math content and provoke exploration of novel ideas and approaches. Everything went well. IEEE volunteers helped with the contest administration.

We held an award ceremony back in May and presented two major awards. The newly created Tina Hohn Award went to an elementary school student and the Robert Jerrard Memorial Award

So far, in 2019, we have lead workshops at Bellevue on Flight (gliders and stick helicopters), Astronomy (by popular request!) creating a planets mobile (another NASA lesson plan), Tall Towers and Electric Motors. A fellow volunteer, Roger Egan, who is a retired radio enthusiast, delivered several sessions on radio and communication fundamentals. The kids learned about Morse code, crystal radios, the basics of wireless, and even soldered a small PCB. It's a similar group compared to the one we had in the fall. The kids keep coming back, so we must be doing something right!

Over the course of more than four years and counting, this collaboration between IEEE and Christie Lake Kids has introduced about 170 young people to the concepts and pleasures of working with science and engineering. 🚀

For further information on the Christie Lake Kids collaboration and projects contact Wolfram at [wolfram.lunscher@ieee.org](mailto:wolfram.lunscher@ieee.org).

went to a Grade 7-to-12 student, and Both awards came with an engraved trophy and a \$250 cheque.

We formed a team of four students and two team leaders in Grades 5 and 6 to participate in the International Mathematics Competition. It was hosted by Bulgaria in 2018 and South Africa in 2019. Fortunately, we managed to form the team, and they participated in IMC and won awards. 🏆

For further information contact Rossitza Marinova at [marinova@ieee.org](mailto:marinova@ieee.org). Mooney Sherman can be reached at [mooneysherman@shaw.ca](mailto:mooneysherman@shaw.ca).

# Have you tried the new [www. tryengineering.org](http://www.tryengineering.org)?

IEEE’s web site for engineering education and training resources not only received a facelift, but the site is also equipped with more intuitive tools to access many categories. Check it out!

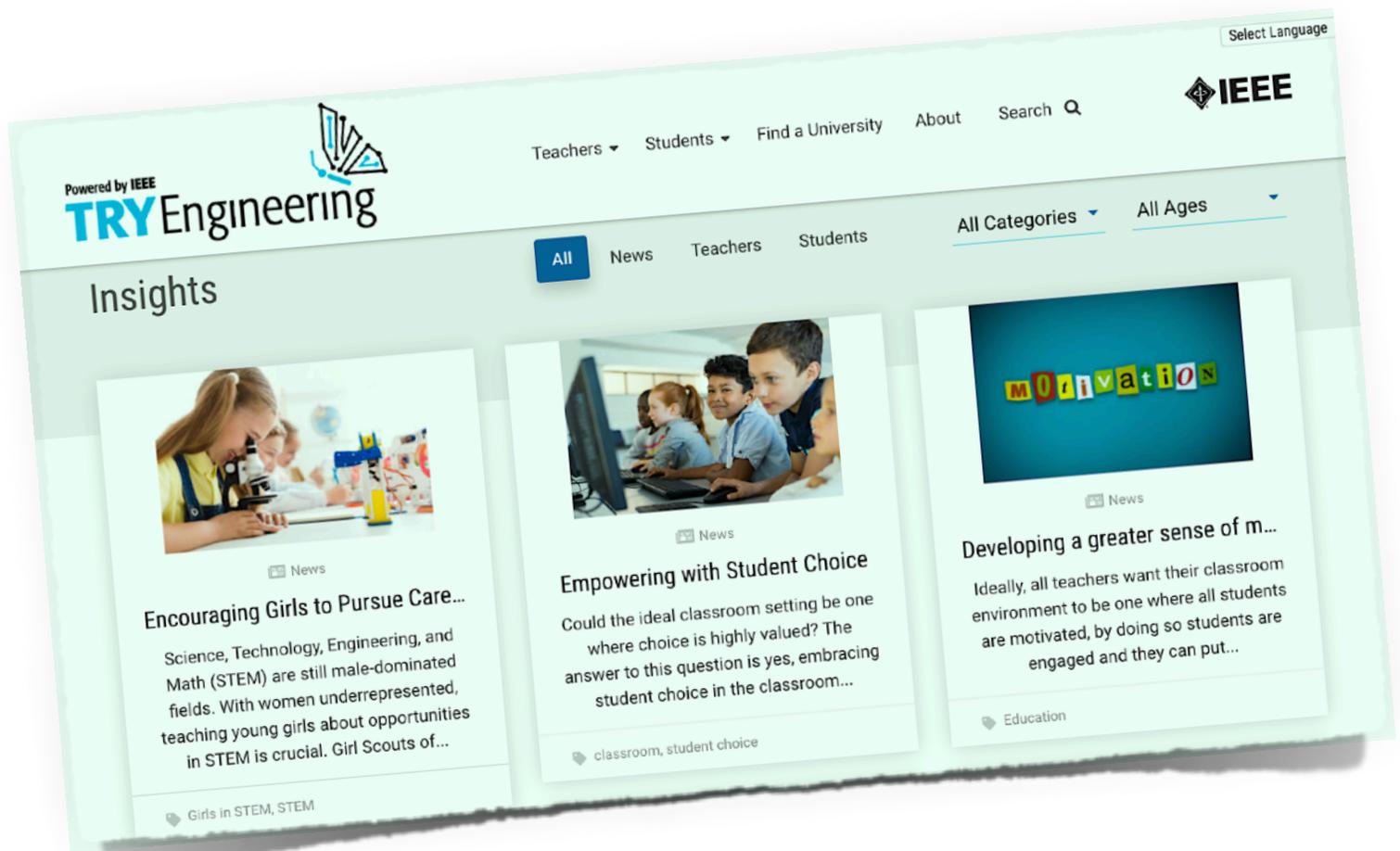
Among engineering-related education and training resources, IEEE’s *tryengineering.org* has been one of the most prominent “go-to” sites. It has received millions of hits. The site now presents itself with a fresh face and a number of new navigation tools to find and access much sought-after information more easily.

The new layout speaks to teachers and students alike. In the first instance, the site offers teachers a variety of resources for all ages, including the tried-and-tested Lesson Plan section, Teacher Resources and a Classroom Activities section.

Students will find lots of information and many paths to explore engineering. On offer are such categories as Engineering Fields, Games, Meet an Engineer, Find a University, and Get Involved.

A recent addition and highlight is *TryEngineering Summer Institute* for high school students, currently focused on the United States. Maybe we will see similar events in Canada soon? 

Stay tuned, learn more about the full details, and visit [tryengineering.org](http://tryengineering.org)!



## IEEE Canada TISP Committee has a new Chair

Murray MacDonald of the London, ON Section, a long-time TISP champion, has recently assumed the role of Committee Chair for the next 3 years. Here is Murray's message.

This is my first opportunity to add a message to our *TISP-Canada Courier* since I took on the role of TISP-Canada Committee Chair in January. I first wish to thank our past chair, Dirk Werle, for his years as our chair. Dirk will continue on our committee and as an editor of the *Courier*.

Our TISP outreach continues to be very active in some sections, notably volunteer activities in Ottawa, Toronto, and London. Several other sections also have active volunteers, but a challenge for our committee is engaging those sections without active TISP volunteers. While we are working to improve our reporting, the partial reporting we have indicates we had over 40 events in 2019 year to date and reached over 800 students and teachers. There is also a multiplying effect when working with teachers in that we can help them to engage students in STEM activities beyond our class visits.

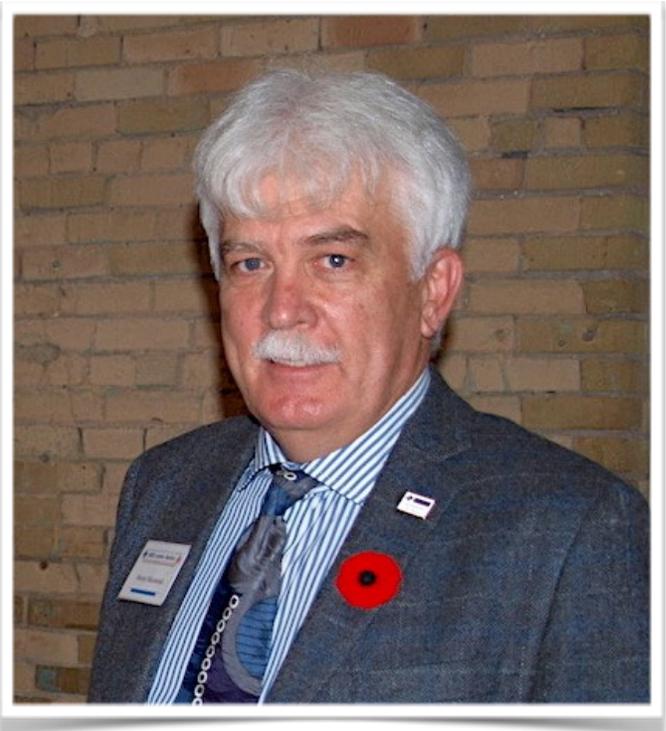
We have recently held workshops at the IEEE Student Congress and the CCECE conference in Edmonton to expand our volunteer base. We will be hosting a workshop at the WIE International Leadership Summit in Halifax in October this year. To work on the demand side of the equation – that is to say, finding teachers to work with – we continue to exhibit at the annual meetings of the Science Teachers Association of Ontario in Mississauga, although this year they have moved from the fall to the spring of 2020. If anyone is interested in doing something like this with other educator organizations, please contact me.

Our committee is working on a couple of other challenges. We have been without a webmaster

for a couple of years, so our website <http://tisp.ieee.ca/> has become dated. We have a volunteer to help transition this site to IEEE's WordPress platform and hope to accomplish it before year end. We have published more than 15 issues of the *Courier* by now, but the frequency has been dependent on content to fill it and the editors' time. We are exploring other ways to deliver our news in a more timely manner and hope to incorporate this on our website.

If anyone is interested in volunteering with TISP, please contact me at the address below. We are willing to help with a local workshop to get things started. 📧

Murray MacDonald  
TISP-Canada Committee Chair  
[murraymacdonald@ieee.org](mailto:murraymacdonald@ieee.org)



## Some Guidelines for Contributors

Articles and news items are welcome and should be sent by 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 semi-annual publication schedule of the *Courier*.

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.

This electronic newsletter is issued quarterly by TISP Canada of IEEE Region 7. Current issues and back issues are freely available and may be retrieved at [www.tisp.ieee.ca/publications.html](http://www.tisp.ieee.ca/publications.html).

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## 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 15 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/tisp](http://www.ieee.org/education_careers/education/preuniversity/tisp)