MSSIC—Making Connections

Spring 2022 Volume 5, Issue 1

SPECIAL POINTS OF INTEREST:

- MSSIC Professional Learning Day May 28, 2022
- Maker Faire registration May 11, 2022
- NL Science Fair News
- Vernier Lessons for Science 1206

INSIDE THIS ISSUE:

MESSAGE FROM THE PRESIDENT

I hope everyone enjoyed their well-deserved Easter break in the midst of another challenging school year. Working through a global pandemic has indeed been challenging for us all with the increased cleaning protocols, mask wearing, physical distancing, etc. Despite that, teachers are doing their best to educate students with a mind to the social and emotional health of those students.

As your Special Interest Council we play two main roles. The first is to support and advocate for adequate Professional Learning opportunities. The second is to advocate for you when new policies, curriculum, and procedures are planned or implemented.

Despite the difficulties of this year, members of the MSSIC are continuing to fulfill its mandate. This past December board member Patrick Wells offered PL sessions on using Lab Pro for high school science activities. These sessions were recorded and can be accessed via our page on the NLTA website, http://www.nlta.nl.ca/mathscience-sic/ under *Conferences and PL opportunities.*

Following on the success of the two virtual science fairs held last year, the Newfoundland and Labrador Science Fairs Council (formerly Eastern Newfoundland Science Fairs Council) organized virtual science fairs for students in two Youth Science Canada regions: the Eastern Newfoundland region and the Labrador, Western and Central Newfoundland region. From those fairs 11 students were selected to represent the province as Science Team NL at the 2022 Virtual Canada Wide Science Fair. This national fair will be hosted by the University of New Brunswick in Fredericton, NB from May 16 to May 20. More information on the national science fairs can be found at https://youthscience.ca/science-fairs/cwsf/virtual-2022/.

There are a number of events coming up in May. Following on the success of the Maker Faire last year, MSSIC board members Jane Lloyd and Annette Warren are organizing another faire for students from K-9. Submission deadline is May 11th. More information can be found on page https://bit.ly/MakerFaireNL. This is a great experiential learning opportunity for students! Thanks to Jane and Annette for their work on this.

Also in May, we are collaborating with Let Talk Science to offer a professional learning day on Saturday, May 28th. There are numerous sessions being offered, free of charge, as well as some wonderful prizes up for grabs. Included in the agenda is a Keynote presentation that will explore the role of Indigenous Ways of Knowing within the classroom.

(Continued page 2)

PRESIDENT'S MESSAGE (CONTINUED)

Recognizing that this is a Saturday event, sessions are offered in three blocks during the day. You can register for only those sessions that fit your availability and interest. More information on the sessions and registration can be found at https://bit.ly/Registration_Professional_Learning_Day_NL.

With respect to our mandate to advocate on issues that affect teachers in the classroom, your SIC has also been busy. As you are aware, the Department of Education is engaged in a review of the teacher allocation model for the province. While many teachers expressed their individual concerns and recommendations through the online survey distributed in March, MSSIC also made a written submission to the review committee. It is important that decision-makers hear from those who have firsthand experience and will experience the results of their decisions and policies. Our submission concentrated on the time allocated to teach science, the dual nature of lab-based science teachers, the impacts of class size on safety, inquiry activity, and assessment.

The Math-Science Special Interest Council (MSSIC) is your council. Please feel free at anytime to contact us with questions, suggestions, or concerns. We welcome your input and encourage your involvement to the extent that you are able.

I wish you every success for the remainder of the school year and hope your summer holiday is relaxing and personally enriching.

Sincerely, Yvonne

MSSIC PROFESSIONAL LEARNING FUND

MSSIC encourages its members to pursue individual professional learning opportunities. To support this, MSSIC has established a budget to support teachers' participation at workshops, conferences and other events that will lead to increased professional and pedagogical knowledge, to improve their practice and, ultimately, the achievement of students in this province.

Eligibility

1. All requests for funds must focus on the professional learning of the applicant.
2. All applicants must give documented evidence that additional sources of funding have been investigated and provide details of other funding received/ available.
3. To be eligible, an individual must be an active member of the NLTA, as described by Section I.A.1 of NLTA Policy.
4. Individuals must spend at least 50% of their time directly providing instruction to students. One-on-one instructional time does not count towards this requirement.
5. At the time of application, individuals must be returning to the classroom in the consecutive school year.

The applicant cannot be in receipt of funding from other NLTA groups/ councils for the event in question.

Grants are awarded two (2) times a year, provided there are suitable applications and funds available. The deadlines for receipt of applications are the third Friday of May and November.

Funds must be approved in advance. The program does not offer retroactivity.

Math-Science Special Interest Council

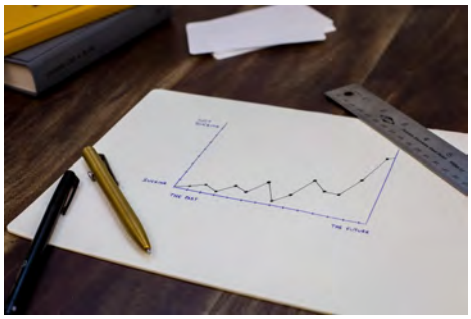
SCIENCE 1206—TIME FOR MOTION!

Do you have Vernier devices in your school? Maybe you want to know what they are. Would you like some help learning how to use them? If you said yes to any of these questions we have an online resource that can help you.

I have been using Vernier for over 20 years. Investigations where students observe and collect data with Vernier, effectively addresses many outcomes from the Integrated Skills Unit. We know that graphing can be a challenge for Mathematics and for the Motion Unit of Science 1206. Using Vernier devices to study motion will help improve your students understanding of graphs and motion variable relationships.

Last year, MSSIC asked a team of educators from the Center for Distance Learning and Innovation (CDLI) and Memorial University of Newfoundland Faculty of Education, to develop a resource to support teachers in using Vernier interfaces for data collection. The team analyzed the Science 1206 Motion unit and selected "Motion on an inclined plan" as the topic to support.

When conducted by students, this activity will address the majority of the Skill and Knowledge outcomes of the



Motion Unit. As a side benefit, the students will have a lot of fun!

If you are new to using Vernier equipment, this resource will remove a lot of the upfront learning that often accompanies use of new technology. All issues are addressed in a Google doc that includes Screencastify videos (link to Google doc). This asynchronous support even tells you which cable goes where! Last year in CDLI school settings, when the lessons started, the students were ready.

What do you need to do to get ready? First, build an inclined plane apparatus. Then use the Google doc to help you practice using the Vernier equipment. When you use this activity with students, start by probing their knowledge. For example, ask them to "Predict the shape of the graph for the object rolling down the inclined plane." Probes and predictions are especially important in teaching as they help you identify student misconceptions. They also help increase student engagement because of the instantaneous feedback.

The instantaneous graphing of motion as it happens, is a great feature of the Vernier interfaces. Not only does it increase engagement, it also helps students figure out the x-axis is time and y-axis is distance.

The hands-on aspect of this lesson addresses curriculum skill outcomes not attainable with simulations and data sharing. Most importantly, when students analyze data they have collected to answer questions about acceleration and instantaneous velocity, it is more meaningful to them.

Give this resource a try! If you are new to using technology in a laboratory activity, you may make mistakes but your students will help you troubleshoot. Everyone learns in the process!

Thanks to Kim Furey, Matt Ball, and Maurice Barry for their work in developing this resource package.

Pat Wells is a PhD candidate at Memorial University.

2022 SCIENCE FAIR NEWS

The Newfoundland and Labrador Science Fairs Council Awards Ceremony

The Newfoundland and Labrador Science Fairs Council (formerly Eastern Newfoundland Science Fairs Council) held a virtual awards ceremony on April 9, 2022. The ceremony was to recognize the hard work of young scientists competing in the two virtual fairs held on April 2 and April 8.

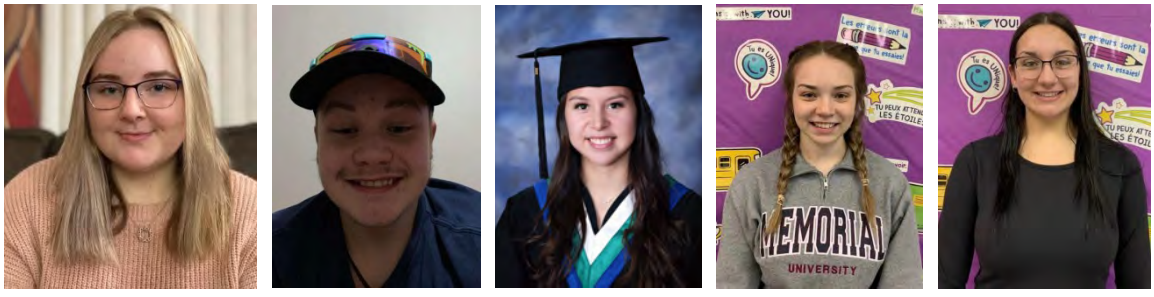
The Cenovus Energy Eastern Newfoundland Science Fair included 60 projects (66 students) from 5 schools: Gonzaga High, Holy Heart of Mary High, Holy Spirit High, MacDonald Drive Junior High and St. Bonaventure's College.

The third annual NL Virtual Science Fair included students from Labrador, Western and Central Newfoundland regions (LWCN). This Fair had 6 projects (9 students) from 6 schools: Christ the King School (Rushoon), Grandy's River Collegiate (Burnt Islands), Indian River High (Springdale), Lake Melville School (North West River) and St. Lawrence Academy (St. Lawrence).

Students from both regions were named to the 2022 Science Team NL. They will represent the province at the 2022 Virtual Canada Wide Science Fair (CWSF) hosted by the University of New Brunswick in Fredericton from May 16 to 20.

From the Eastern Newfoundland region, Team NL includes Gonzaga's Tanish Bhatt, Holy Heart students Farha Farha and Megan Cui, Alpita Patro from MacDonald Drive Junior High and St. Bonaventure's College students Makenzie Wishart and Sophia Zhang. Joining Team NL from LWCN are Antonia Lundrigan and Edmund Pelley of St. Lawrence Academy, Grace Tuglavina of Lake Melville School, and Heidi George and Julissa Hodder from Grandy's River Collegiate. For other top prizes and winners by school and grade see page 7.

Science team NL (from Eastern region): Alpita, Farha, Mackenzie, Megan, Tanish (missing Sophia)



Science team NL (from Labrador, Western, Central region): Antonia, Edmund, Grace, Heidi, Julissa

YOUTH SCIENCE CANADA DISTINGUISHED SERVICE AWARD

During this year's science fair awards ceremony, a special presentation was made to recognize a dedicated science fairs council volunteer. Fiona Cuthbert, a MUN Biology lab instructor, joined the science fairs council in 1999. Since then she has served in many roles including Vice-chair (2011-2012), Co-chair (2012 - 2014) and chair of the Special Awards committee from 2014 to the present. Fiona was recognized for her years of hard work and service with a Youth Science Canada Distinguished Service Award. This is one of eight awarded across Canada this year.

A CHANGE OF NAME AND LOGO FOR NL SCIENCE FAIRS

Over the last number of years, the Eastern Newfoundland Science Fairs council, led by committee member and CDLI teacher Yvonne Dawe, began hosting a virtual science fair for students outside the Eastern Newfoundland region. As the committee's mandate changed to be more provincial in nature, it was decided a name change was in order. The newly branded "Newfoundland and Labrador Science Fairs Council" required a new logo.

In March, a competition was held to invite students to submit their ideas for a new logo design. The Council was pleased to receive 24 entries that may be viewed at https://enstf.ca/. This new logo was revealed at this year's Science Fairs Awards Ceremony.

The submission by Doris Chavez, a student at MacDonald Drive Junior high, was chosen as the inspiration for our new logo. Doris received a $250 prize for her efforts.

All projects and awards can be found at https://enstf.ca/awards-and-winners/

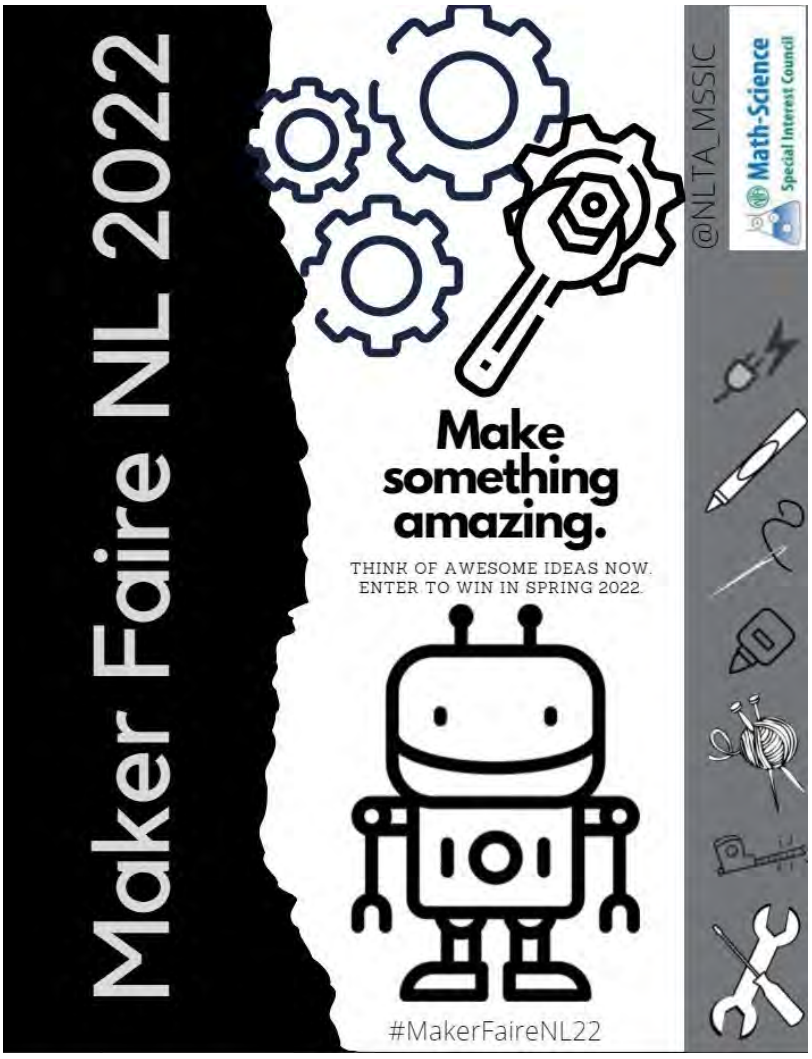
For more information, please contact yvonnedawe@nlesd.ca

MAKER FAIRE 2022

Building on the huge success of our inaugural Maker Faire 2021, the MSSIC (Math & Science Special Interest Council) of the NLTA is excited to announce our SECOND ANNUAL K-9 **Virtual Maker Faire.**

What is a Maker Faire? It is a gathering of "makers": (anyone who makes : tech enthusiasts, crafters, hobbyists, authors, engineers, artists etc.) who will share their projects virtually to showcase the innovation, experimentation and passion for making in our province.

Why are we doing this? We want to showcase the amazing, creative and innovative students that we have in our province and provide a space where everyone has an opportunity to showcase things that they design and build something that interests them. **The general idea is to make something and tell us about it.**



Who can participate and how? All NLESD students from K-9 can choose to enter a project or collaborate with a group. Students can complete their projects at home or at school. Teachers may also wish to include the Maker Faire as a part of their cross-curricular instruction. Students simply have to submit their project by uploading it to the Maker Faire website. (Please see the site for more details).

Submission deadline is May 11, 2022.

Prizes for individual, small group and class project K-3, 4-6, 7-9 in each region will be awarded.

Please see the Maker Faire website for more information.

If you have any questions, please feel free to contact: Jane Lloyd- janel-loyd@nlesd.ca

Annette Warren,
Sprucewood Academy

2022 SCIENCE FAIRS TOP PRIZE WINNERS

Prize/Award	Winner	School	Grade
MUN Faculty of Science Entrance scholarship $1000 (renewable in 2nd semester) Best senior project	Farha Farha	Holy Heart	12
MUN Marine Institute Entrance scholarship $1000 (renewable in 2nd semester) Most innovative marine and/or fisheries related project (senior division)	Grace Tuglavina	Lake Melville School	12
****Cenovus Energy Indigenous Scholarship*** $2500 to best project by an Indigenous student	Grace Tuglavina	Lake Melville School	12
****Sanofi Biogenius Canada Award*** $100 Best project related to biotechnology or life sciences, in each fair	Alpita Patro Antonia Lundrigan & Edmund Pelley	MacDonald Drive Junior High St. Lawrence Academy	8 11
Top 3 projects in Eastern Fair ($1000 total)	Sophia Zhang Alpita Patro Farha Farha	St. Bonaventure's MacDonald Drive Holy Heart	8 8 12
Top 3 projects in LWCN Fair ($1000 total)	Antonia Lundrigan & Edmund Pelley Grace Tuglavina Heidi George & Julissa Hodder	St. Lawrence Lake Melville Grandy's River Collegiate	11 12 12

*new awards for 2022

Congratulations to all students who completed a science fair project this year. These young scientists, as well as their parents/guardians, teachers and other members of their school communities, are commended for their efforts during another challenging school year.

GREEN CHEMISTRY

The Science Teachers Association of Ontario (STAO) held their annual conference November 26 and 27, 2021. The virtual conference, "Moving Forward, Together – A STAO Experience", offered a wide variety of sessions for educators of science at all levels, from K-12.

One session I attended was LabXchange, hosted by Kristina Han. LabXchange is an online platform that offers a collection of resources including simulations, interactives and video content. These come from a variety of sources such as pHet, Khan Academy and HHMI Biointeractive. Best of all it is free to use. During the presentation, we completed a gel electrophoresis simulation. It was very user friendly, realistic and can be completed in about 30 minutes. More can be found on the LabXchange website (https://www.labxchange.org/).

"This organization offers activities that reduce waste, energy and hazards"

The second session I attended was "Green Chemistry – Beyond Benign". Beyond Benign, was co-founded by American chemists Dr. Amy Cannon and Dr. John Warner. It is a non-profit "dedicated to sustainability and green chemistry education". This organization offers activities that reduce waste, energy and hazards with a focus on using less hazardous chemicals. There are a wide variety of resources available through the Beyond Benign website.

I was familiar with Beyond Benign having attended one of their sessions at the 2018 STAO conference. The emphasis was on using chemicals that can be used for high school laboratory activities that are less harmful than those traditionally used. One of the activities in that session involved using tea, baking soda and vinegar to demonstrate the effects of changes in concentration on a system at equilibrium (Le Chatelier's Principle). This was an activity I introduced to teachers at the 2019 fall in-service for the implementation of the new chemistry 3202 curriculum. This activity can be found here.

(continued page 9)

GREEN CHEMISTRY (CONTINUED)

This year's session was hosted by Ken Hoffman, Senior school chemistry teacher from Strathcona-Tweedsmuir School in Okotoks, Alberta and Dr. Andrew P. Hicks, Professor, Dept. of Chemistry, University of Toronto. The activity featured was the reaction of calcium chloride with sodium carbonate to produce a calcium carbonate precipitate. This is a lab activity I have often used in the chemistry 2202 stoichiometry unit. It allows students to practice important laboratory techniques such as decanting and filtration while applying what they have learned about limiting and excess reagents as well as percent yield. This activity can be found here.

The reactants used in these activities, as well as the substances produced, are less hazardous than many chemistry teachers have used in the past. While both calcium chloride and sodium carbonate are irritants with a health rating of 2/4, the products of this reaction, solid calcium carbonate and aqueous sodium chloride, are safer (health rating = 1/4). This allows for safer handling as well as safer disposal of the products. Additionally, many of these substances are readily available from a grocery or hardware store and are often cheaper than those purchased from a chemical supply company.

This past March, I completed an online green chemistry course, "Sustainable Science", offered by Beyond Benign. I plan to share some of what I have learned at the NLESD ULearn conference this coming August. Please join me if you are interested in learning some useful and safe green chemistry lab activities.

Yvonne Dawe is MSSIC President and CDLI Chemistry teacher.

Professional Learning Day

May 28, 2022

9:30 - 12:00 pm NDT	**Discovering Science Beyond the Textbook (Gr 4-12)** We all know that science is more than just the stuff in textbooks. And we also know that the hands-on part is important too. But did you know there was even more to this thing we call "science"? In this session we will engage in an activity that will help students have a better appreciation of some features of what is referred to as the Nature of Science.	**Sparking Learning Through Action with the Sustainable Development Goals (K-Gr 12)** Do you want to empower your students to see themselves as changemakers who can find solutions to problems in their lives and communities? Join us for an interactive webinar and discover how to use the United Nations' Sustainable Development Goals to spark student-led action in your class. Through a series of collaborative and reflective activities, you will discover how students can engage in design thinking through the lens of empathy, determine what an action project might look like in your school context and explore classroom-ready resources to help you get started.	**Designing STEM Cross-Curricular Learning (K-Gr 12)** Our experience of the world is multi-faceted. Does the way we teach prepare our students for that reality? Join us for an interactive webinar and discover how to leverage cross-curricular learning in order to deepen your students' understanding of STEM concepts. Through a series of collaborative and reflective activities, you will identify opportunities for exploring topics through the lens of different subjects, use an Outcome Mapping strategy to develop a learning plan and explore criteria and formats to assess cross-curricular learning.

Lunch 12:00 am - 12:30 pm NDT

12:30-1:45 pm NDT	**Bubbling Up... A Coffee and a Keynote with Dr Sean Lessard** Explore the role of Indigenous Ways of Knowing within the classroom while learning about the importance of building strong relationships with the youth we teach, both inside and outside of the classroom. Join award-winning keynote Dr. Sean Lessard, an associate professor at the University of Alberta, for an important presentation on how different perspectives can enrich your students' learning. Sean will help educators with the process of integrating Indigenous Ways of Knowing into the curriculum and give invaluable tips based on his own personal experience. A member of the Montreal Lake Cree Nation in Treaty 6 territory, Sean continues to work with Indigenous communities every day and has a deep understanding of the connections between STEM and Indigenous Ways of Knowing.

1:50 - 2:50 pm NDT	**Explore an Innovative Design and Build Challenge: Create a Bee House (Gr 4-9)** Investigate the problem of habitat loss for local pollinators by learning how to support students in solving the problem through designing and building a house for solitary bees using simple materials. Discover how students can create an algorithm to share their step-by-step instructions for building a bee house with others.	**Discover Data Representation Using Google My Maps (Gr 4-12)** Mathematical learning experiences are meaningful to students when they play a role in generating inquiry questions and are part of the data collection process. Enrich math, data management, social studies and more with Google My Maps. Learn how to import data from a spreadsheet and customize new maps. Have students develop map-based solutions to common questions regarding travel, distance, area, and location in your local community and beyond.	**Build a Virtual Scavenger Hunt (Gr 7-12)** Create interactive scavenger hunts using Google My Maps and Google Forms. Learn how to design a sequence of questions and challenges that support the diverse needs of students. Explore opportunities for students to engage in cross-curricular learning and computational thinking. Add fun and discovery to student learning while teaching persistence and resilience with debugging activities.	**Relevant Robots: Connecting Robotics Across Curricula (K - Gr 6)** Are you curious about teaching robotics but are not sure where it fits in with your program? Join us for an exciting webinar to learn about how robotics can be integrated across subject matters to teach curriculum outcomes. Discover hands-on robotics and coding activities with links English/French Language Arts, Mathematics, Science, and more.You do not need to have access to robotics kits to use the ideas presented in this webinar, although versions of the activities are provided for those who do!

To Register: https://bit.ly/Registration_Professional_Learning_Day_NL

No Charge for Students & NLTA Members

let's talk science

Math-Science Special Interest Council