

STAN

SCIENCE & TECHNOLOGY
AWARENESS NETWORK



RSST

RESEAU DE SENSIBILISATION
SCIENCES ET TECHNOLOGIE

VIRTUAL CONFERENCE
FEB 25-27, 2025

STEM AND SUSTAINABILITY

Nurturing Individuals, Transforming Communities

STEM

www.stanrsst.ca/conference

FINAL PROGRAM



All times listed in Eastern Standard Time

Join us in person to meet and network with colleagues in your area

Montreal	Wednesday, February 26; 10am ET conference watch party
Ottawa	Wednesday, February 26; 9:30am ET artefact tour and conference watch party
Toronto	Wednesday, February 26; evening informal gathering
Kitchener	Wednesday, February 26; 5pm Eastern informal gathering
Vancouver	Tuesday February 25; 5pm pacific informal gathering

More information to come...

Day 1: February 25, 2025

11:00 ET Word of welcome and Land Acknowledgement

Join us on Slack!

Chat with other delegates at the Conference

11:30 - 12:30 ET **Dismantling the SySTEM**

Dr. Svetlana Barkanova, she/her, Memorial University of Newfoundland, Professor of Physics, English

Dr Kevin Hewitt, he/him, Dalhousie University, Professor in the Department of Physics & Atmospheric Science, Associate Dean, Equity and Inclusion, Faculty of Science, English

Dr. Stephanie MacQuarrie, she/her, Cape Breton University, Associate Professor of Chemistry, Dean of Science & Technology, English

Join the NSERC Chairs for Inclusion in Science and Engineering - Atlantic (CISE-Atlantic) for a rapid-fire session of learning and sharing. From recognizing the realities of rural and remote communities in Labrador to exploring the question "why STEM?", this session emphasizes the need for collaborative, cross-disciplinary, multi-pronged approaches to EDI and STEM outreach work. Participants will reflect on their own positionality and experiences within the STEM ecosystem, drawing connections between one another and leaving with tools to foster more inclusive environments.

Followed by open networking on the STAN Zoom account

13:30-14:00 **Annual General Meeting**

The AGM is a forum for members to hear from and ask questions to the STAN leadership, to provide input on governance and services. We will review the financial statement, annual report and strategic plan.

14:00 – 15:00 ET

Creating STEM Equity models to move organizations forward

Catherine Paisley, VP of Strategic Initiatives at the Ontario Science Centre
Kristin Chong, Senior Research and Evaluation Advisor at the Ontario Science Centre.
Dr. Julia Lalonde, Director of Research and Impact at the Ontario Science Centre
Samantha David, Director, TREDIA Relationships and Initiatives, Ingenium
Sandra Corbeil, Director of Strategic Partnerships and Networks at Ingenium - Canada's Museums of Science and Innovation

STEM equity is an important concept for Informal Science Education (ISE) institutions. In recent years, an increasing number of organizations have been actively focusing on including more children and youth from underrepresented groups in their STEM programming. In order to ensure inclusive access, representation and opportunities in STEM initiatives, it is important to create and apply models that can help organizations focus on equity and inclusion, thereby empowering individuals through STEM.

The Ontario Science Centre developed a “STEM Appreciation, Identity and Aspiration” model that builds on Dr. Louise Archer’s work and provides a framework to think through programming and the impact the Centre hopes to achieve. This model is currently in the validation stage and engagements in forums such as the STAN conference will provide opportunities for feedback and learning on both sides. Ingenium developed an approach that aligns its actions towards truth, reconciliation, equity, diversity, inclusion and accessibility (which they call TREDIA) in order to inform all levels of planning from high level strategies to individual workplans.

During this 60-min session, representatives from both organizations will present their respective model and talk about how it has been applied in their organization. They will then put participants into breakout rooms where they can apply the model to their work and provide presenters (or other representatives from the organizations) with feedback.

Followed by open networking on the STAN Zoom account

15:15 – 16:00 ET

Networking: Meet Your Fellow STAN Members

Lead and Moderated by STAN Board

After briefly laying down the ground rules, we will be shuffling participants into small breakout groups of about 3 or 4 people. You will have about 5 minutes to introduce yourselves and what brings you to the Conference and exchange information before we reshuffle you into new rooms, with new people. Later, you can reconnect with your peers on the STAN Conference Slack channels, or catch up in one of the mini networking sessions following our presentations.

Join Slack!

Chat with other delegates at the Conference

17:00 Pacific

Vancouver participants in-person gathering

Join us to meet fellow conference participants and casually network on Tuesday February 25th. Meet in front of Science World at 5 pm Pacific.

Day 2: February 26, 2025

11:00 Check-in | Coffee & Open Chat

10:30 – 16:30 ET

Montreal participants in-person gathering

Come and watch Day 2 of the Conference at the Campus MIL of Université de Montréal (1375 Avenue Thérèse-Lavoie-Roux, Montréal, QC H2V 0B3), from 10h30 to 16h30.

9:30 – 16:30 ET

Ottawa participants in-person gathering

Join us at the Ingenium Centre in Ottawa. We'll stream the day's conference sessions live from a dedicated meeting room for all attendees on-site.

Bonus Experience – Exclusive Artifact Tour!

Start your day with an exclusive behind-the-scenes tour of Ingenium's artifact collection at 9:30 AM. Located next to the Canada Science and Technology Museum, the Ingenium Centre houses thousands of fascinating artifacts not displayed in the museums. This year, the tour will be led by Molly McCullough, Ingenium's Curator of Agriculture and Environment, who will connect the experience to sustainability themes from the conference.

11:30 – 12:30 ET

STEM for a Thriving Future: Integrating Well-being and Sustainability into Education

janice (jay) williams B.Ed., M.P.Ed., OCT, Learning and Engagement Specialist

In a world facing complex challenges like climate change, social inequities, and resource depletion, it is more crucial than ever to equip students with the knowledge, skills, and values to create a sustainable and thriving future. This presentation explores how educators can foster a culture of well-being and sustainability through STEM education.

We will begin by defining well-being as a holistic concept encompassing physical, mental, emotional, and social aspects, and sustainability as a development approach balancing environmental, social, and economic considerations. We will examine how

STEM education can provide students with the tools to understand and address real-world challenges related to these interconnected themes.

The presentation will then explore why this perspective is essential for society and students. Participants will gain insights into how STEM-driven innovation can lead to solutions for global challenges, and how learning through the lens of sustainability and well-being can inspire students to take action and create positive change, fostering a sense of responsibility for the planet and its people.

Followed by open networking on the STAN Zoom account

13:30-14:30 ET

Supporting Young Minds: Education as a Tool Against Climate Anxiety

Breanne Aylward (she/her), PhD Candidate, University of Alberta
Kassandra Boddie (she/her), Regional Coordinator (Ontario), Let's Talk Science
Valerie Miller (she/her), PhD, Outreach and Engagement Lead, Future Energy Systems
Gabrielle Veilleux (she/her/elle), Coordinator of Volunteer Professional Development & Training, Let's Talk Science

Join us to explore climate anxiety – what it is, its impact on youth, and strategies to support youth through education.

Climate change can be a scary topic for youth and adults. We see the impacts of climate change in the news or experience them every day. Learning about and experiencing the effects of climate change can sometimes make us feel worried, fearful, helpless, or uncertain about the future of our planet. These feelings are a very rational response to the real climate change challenges. The term climate anxiety is often used to describe these types of feelings.

This roundtable session will introduce participants to the concept of climate anxiety and research that explores how common it is among young people in Canada. Facilitators will discuss strategies for understanding and managing climate anxiety through education and outreach. This will include new research, classroom programming, and professional development initiatives for volunteers and academics.

Participants will join breakout rooms to discuss their own experiences with climate anxiety, explore how audiences they work with are impacted, and share methods for using education to tackle these issues. Together, participants will identify tools and strategies relevant to their unique contexts.

BREAK

14:45-14:55 ET

From Fantasy to Fact: How Fiction Fosters STEM Literacy

Conan Lee, M.A Science Education, The University of British Columbia

Effective STEM education and communication should pique interest and promote understanding. To enhance emotional and cognitive engagement, one possible

avenue is to incorporate fictional contexts. While fiction plays a significant role in people's lives and can be a powerful tool for engaging and inspiring learners, it is often underused due to a lack of awareness of its potential, or misused due to a limited understanding of its application.

This session will discuss the potential impact of using fiction in STEM education and communication. It will share effective strategies that empower science communicators, educators, and researchers to leverage the power of fiction to foster STEM literacy across various contexts, including education, outreach, as well as media and content creation. Research evidence and practical examples will form the foundation of this discussion.

15:00-16:00 ET

STEM through the arts: How Gamification and StoryMaps Play a Role in Science Education Outreach

Dr. Poh Tan, Faculty and Research Associate , Simon Fraser University and Emily Carr University of Art and Design

Melissa Chung, UX/UI Designer, STEMedgeInc.

Philip Randle Newcombe, Student, Emily Carr University of Art and Design

Jaehyun Jun, Student, Emily Carr University of Art and Design

The connection between science education, interactive arts, and gamification shares a commonality to make learning more engaging and accessible. In the context of science public outreach, animation and gamification simplify complex scientific concepts by making them interactive, visually appealing, and relatable. Often, scientific knowledge is presented either in a “textbook-style” approach or shared from an expectation that the audience have deep scientific knowledge. This approach to learning science is not accessible in regards to learning, and becomes irrelevant to the audience because they cannot connect to the information and thus, becomes irrelevant. The approach to bring interactive arts into science education increases student motivation and public engagement with science.

In this panel, we will be talking about our use of ArcGIS StoryMaps as a powerful storytelling platform that can further enhance science outreach by combining interactive maps with multimedia elements, videos, and text. We will be sharing a StoryMap and the practice of water meditation with the audience. This StoryMap experience integrates the science of water, history and stories about False Creek, a local area that has been transformed from an ecologically rich area into a commercial space, and how reclamation of habitat by the city intends to bring diversity back to the ecosystem. This virtual experience is facilitated by experiential and somatic learning through technology. In addition to technology, we will be discussing the role of gamification and impact on engaging the public in citizen science. The concept of invasive species is a topic of discussion among ethnobiologist. In our panel, we will be looking at the role of QR-activated and a turn-based card game to learn about how invasive species become invasive. The QR-activated, turn-based card game integrates disciplines like biology, economics, culture, and sociology, offering audiences insights into how sustainability and conservation hinge on understanding the effects of actions and decisions across various fields on planetary health. This cross-disciplinary approach mirrors our panel participants’ background and interest in bringing science to the public in an educationally relevant and fun experience.

Followed by open networking on the STAN Zoom account

Toronto participants in-person gathering

More details to come. We can't wait to see you.

17:00-19:00 ET

Kitchener participants in-person gathering

Join us at the "The Tannery", for a post-conference informal gathering. A chance for like-minded STEAM outreach people to connect and share after enjoying the day of STAN conference programming.

Day 3: February 27, 2025

11:00 Check-in | Coffee & Open Chat

11:30 -12:30 ET

Playing at the intersection of STEM and the arts: Collaborative learning with Cultivating Ensembles

Dr. Marisa Alena Holzapfel, Carl von Ossietzky University of Oldenburg (Germany)
Dr. Carolyn Sealfon, Minerva University, University of Toronto, Princeton University as Associate Director of Science Education, West Chester University of Pennsylvania, and STEMCivics High School.
Dr. Barbara J. Natalizio, University of Massachusetts Chan Medical School., Program Manager, Professional Development Hub (pd|hub)
Dr Sofya Borinskaya, Assistant Professor of Biology, Saint Elizabeth University

How do artists, dancers, improvisers, and designers create transdisciplinary, inclusive communities with colleagues in science, technology, engineering, mathematics (STEM)? How do scientists, engineers, technologists, physicians and mathematicians inspire the artistic process, or combine STEM and arts into STEAM? Now imagine creating an inclusive, interactive space beyond these labels.

Join the organizers of Cultivating Ensembles and experience the interactive playful activities and methodology that have built virtual ensembles and produced an interdisciplinary, inclusive, and playful community. We will share some of the history, values and practices of the Cultivating Ensembles conference, including intentionality in developing integrated professional environments across intersections of race, gender, institutional locations, and disciplines. The Cultivating Ensembles bi-annual conference brings together diverse and interdisciplinary scientists, educators, and artists for a 3-day experience of sharing research, education, and science communication practices in the sciences, arts, and humanities. This session will focus on playing at the intersection of science and the arts. Our innovative practitioners will lead you through their experiences in and out of the classroom and share their tricks and tips for facilitating engagement. We will alternate between engaging participants in activities, and reflection opportunities for participants to process the strengths of

each approach and adapt key elements of the activities to their own contexts and practice. We will apply our strategies to build a sense of inclusive community with participants during the 60-minute workshop, and invite participants "behind the curtain" to understand and apply our methodology for themselves. Many of our approaches are connected to applied improvisation. The goal of this session is for participants to be present as their curious, authentic selves and co-create with us, through play and collaborative learning, a suite of approaches for building community in a variety of different environments.

Followed by open networking on the STAN Zoom account

13:30 – 14:30 ET

Learning as an Experience: STEAM's Evolving Frameworks

Ashley Miller, PhD, Science Communicator, Writer, Artist & Informal Educator, Stirplate Studio

Many informal educators and science communicators are motivated to use STEAM or SciArt to help them impart not just new knowledge but also create personal and emotional connections for audiences. At this aim's core are the ideas of "learning from experience" **and** "learning as an experience" that is memorable, moving and meaningful. "Transformative experiences" like these allow learners to find value in new concepts because of how they reshape their perception of the world beyond the educational encounter.

The Arts and STEM disciplines can independently provide learners with these kinds of transformative experiences that enrich their everyday lives. STEAM, as an educational framework or a catchall for any intersection of the Arts and STEM fields (e.g., SciArt, Art-Science, etc.), also has this potential.

However, despite widespread adoption, STEAM education lacks unified instructional practices, and core research themes have been disjointed since STEAM was first coined in the late 2000s. Several approaches to STEAM implementation have emerged in recent years. However, the reciprocity between STEM and the Arts within STEAM is not always balanced. Frameworks have emerged to interrogate our conceptualizations of STEAM, Art-Science, and how the disciplines relate. These frameworks can guide STEM educators and science communicators seeking to ethically and authentically implement STEAM and the Arts for educational experiences or to collaborate with artists.

In this interactive workshop, we'll explore the breadth of current research on STEAM, STEAM education, and Art-Science with examples from across the field. Throughout the session, we'll participate in brief art activities that will encourage us to explore how the arts support knowledge creation and close observation, cultivate collaboration and playfulness, and foster meaning-making. STEM educators who may not have professional training or hobby experience with the Arts will learn concepts and tools to help them incorporate artistic activities or elements into their professional practice through STEAM.

Followed by open networking on the STAN Zoom account

Conversations with science deniers – the choice is yours

15:00 – 16:00 ET

Renée-Claude Goulet (she/her/elle); Science Advisor, Canada Agriculture and Food Museum (Ingenium Canada)

Michelle Campbell Mekarski (she/her/elle); Science Advisor, Canada Science and Technology Museum (Ingenium Canada)

Cassandra Marion (she/her/elle); Science Advisor, Canada Aviation and Space Museum (Ingenium Canada)

Some conversations we have as science communicators in public-facing institutions – and more broadly in our lives – may involve people that trend towards a science-denier or anti-science mindset. Climate-deniers and anti-vaxxers are two common examples.

Each person's capacity to engage in these conversations will depend on their unique history and experiences, the person/situation they're dealing with, and also on their personal limits. Ultimately, the choice of whether to leave the conversation, continue with a safer topic, or challenge the misinformation is UP TO YOU.

Unfortunately, it is not uncommon for these conversations to become confrontational, offensive, emotionally charged and volatile. For those in public-facing roles, these interactions can come up more often, and we may feel an added responsibility to defend science. These conversations can be difficult to navigate, emotional, and even traumatic.

Through group discussion, role play, and practical tips, this interactive workshop will give participants the tools they need to navigate challenging conversations around science, while protecting their mental health. As the facilitators act out scenarios, the audience will decide what they say next in this "choose what happens next game" approach. Topics range from climate change to vaccination, and can be customized to specific topics or situations participants encounter in their work.

Followed by open networking on the STAN Zoom account

Closing Remarks

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