

2018 MAINE STEM SUMMIT PROGRAM

BREAKOUT BLOCK 1

8:45am-9:45am

1. STEM Hiding in Plain Sight – *EQUITY IN STEM STRAND*

Facilitators: Sarah Kirn, GMRI & Ruth Kermish-Allen, MMSA

Speakers:

- Daniel MacPhee, Ed. Director MOFGA
- Jan Piribeck, University of Southern Maine
- Sebastian Belle, Executive Director of Maine Aquaculture Association
- Jason Constantine, COO Back Cove Yachts

Description: STEM certainly does not always mean lab coats, beakers, and PhDs. STEM expertise can often be hidden in our rural communities and not even identified as STEM. For our state's young people, we need to find innovative and unexpected entry points to hook students interests in STEM learning. In this session we will explore this as we hear from a variety of Maine's STEM professionals that often go unnoticed in the STEM debate.

RM: Jalbert 410

2. STEM Equity through Mirrors and Windows: How do we reflect on our practice while also seeing other practices in action - *EQUITY IN STEM STRAND*

Facilitator: Perrin Chick, MMSA

Description: Mirrors and Windows: these tools give us the opportunity to reflect and look beyond. Though this dynamic session will engage participants in rich discussions and fun hands-on activities, the take away message will be more serious: What are we doing and what could we be doing to increase equity within our out-of-school programs and how do we encourage more Maine students to go into STEM careers

RM: Kirk Auditorium

3. Professional Learning Standards - A Driver of Professional Development? - *PRE-SERVICE & IN-SERVICE STRAND*

Facilitator: Lynn Farrin, MMSA

Description: Too often professional development is 'done to people' and not given sufficient planning. A new tool "Science Professional Learning Standards" has emerged that identifies attributes of high quality professional learning opportunities, suggests ways to implement and sustain a professional development infrastructure, and provides ways to evaluate professional learning opportunities. This hands-on workshop will review each of these three main areas.

RM: Jalbert 15

4. What about preschool and afterschool STEM? – PRE-SERVICE & IN-SERVICE STRAND

Facilitator: Sue Allen, MMSA

Speakers:

- Sarah Sparks, University of Maine Cooperative Extension 4-H
- Alison Miller, Bowdoin College
- Martha Eshoo, the Bowdoin's Children Center

Description: While K-12 certainly provides much opportunity for youth to learn STEM, there are other times in life where learning about STEM are possible. Alison Miller has noticed that young children seem to inherently engage in science and engineering practices. She is working with four sites around the state to confirm these observations and contemplate the implications such as training for preschool providers. Sue Allen is leading a project to develop STEM teaching skills among rural afterschool providers. This panel will further explore learning in non-traditional, out of school settings.

RM: Tower 303

5. Nontraditional ways to get the word out about STEM careers – STEM CAREER PATHWAYS STRAND

Facilitator: Kate Dickerson, Maine Science Festival

Speakers:

- Kristy Townsend, University of Maine
- Meg Branson, GE Power
- Patrick Breeding, CEO of a start-up

Description: In this facilitated panel discussion, you will hear from people who have presented at the Maine Science Festival (MSF). They will share information about the STEM aspect of their work, and why they use events like the MSF to let people know about their career choices. The panelists will provide their insight on the different types of ways they've talked about STEM at the MSF (workshops, forums, Friday Field Trip Day only, general public presentations), and talk about what they think works best (or not) for different audiences.

RM: Lapoint 216

6. Enhancing student mathematical experiences through an investigative partnership - INNOVATIVE PARTNERSHIP STRAND

Facilitator: Peter Tierney-Fife, Education Development Center

Speakers:

- Meredith Swallow, PhD, UMF
- Shannon Larsen, PhD, UMF
- Lisa Coburn, Auburn Schools

Description: Learn about the Research + Practice Collaboratory work in Auburn, an investigative partnership that focused on enhancing classroom practices

through technology in early mathematics. Partners researched practices and produced professional development materials that have been used to improve the quality of mathematical experiences for elementary students across Maine.

RM: Jalbert 500

7. In Support of Mathematics Teachers/Coaches - *INNOVATIVE PARTNERSHIP STRAND*

Facilitator: Sandra MacArthur, UMF

Speakers:

- Sandra MacArthur, UMF
- Michele Mailhot

Description: This session will focus on the innovative partnership developed between a local school district, the University of Maine at Farmington, and Maine DOE to support the development and implementation of the Maine Mathematics Coaching Project (elementary and secondary level). As well as the continued partnership with the University of Maine at Farmington and Maine DOE in support of the Mathematics Teacher Leader Certificate Program. These projects empower classroom teachers and math coaches to step up in leadership roles to support student engagement, learning and understanding in mathematics.

RM: Kirk Gym

8. Using Data to Identify Challenges and Measure Progress Towards Equity in STEM Education – EQUITY IN STEM STRAND**Facilitator:** Laura Millay, RiSE Center**Speakers:**

- Laura Millay, University of Maine
- Shari Templeton, Maine Department of Education
- Amy Johnson, University of Southern Maine

Description: Standardized test and survey data gathered from students across Maine can help identify gaps in students STEM achievement and career aspirations. In this session, we will use data from Maine students and teachers to spark discussion about current equity gaps and strategies for addressing them.

RM: Tower 303**9. Designing STEM Experiences for Disaffected/Underserved Youth – EQUITY IN STEM STRAND****Facilitator:** Bill Zoellick, Schoodic Institute & Sarah Kirn, GMRI**Speakers:**

- Bill Zoellick, Schoodic Institute
- Ryder Scott, University of Maine 4-H
- Jen Atkinson, MMSA

Description: STEM learning should be for everyone. The speakers and audience will draw upon lessons learned from existing programs to explore the question of how STEM learning experiences can be designed to engage the interest and aspirations of a broader cross-section of students, from the academically motivated to the academically disengaged.

RM: Jalbert 500**10. Learning in-, From-, and For- Next Generation Science Teaching – PRE-SERVICE & IN-SERVICE STRAND****Facilitator:** Christine Voyer, GMRI**Speakers:**

- Kate Cook Whitt, Thomas College
- Michael Wittmann, University of Maine RiSE Center
- Alison Miller, Bowdoin College
- Lynn Farrin, MMSA

Description: Four presenters will share their experiences working with pre-service and in-service teachers as educators begin to implement the reforms called for in the Framework and

the NGSS. Drawing from pre-service and in-service learning models presented by each of the panel members in addition to the successes and lessons learned, the panel will work collaboratively with the audience to chart a shared vision for professional learning aimed at preparing Maine's educators (pre-service teachers, in-service teachers, and school leaders) to effectively engage students in three-dimensional science learning. In this session, participants will learn about four professional learning programs designed to enhance classroom instruction.

RM: Jalbert 410

11. Classroom to School Leadership - *PRE-SERVICE & IN-SERVICE STRAND*

Speakers:

- Beth Byers-Small, Maine Center for Research in Stem Education (RiSE) and Maine STEM Partnership
- Diana Allen, Elevating and Celebrating Effective Teachers and Teaching (ECET2) in Maine and MSTA
- Sandra MacArthur, UMF

Description: Teachers operate on many levels of leadership; with students and colleagues, in a school or community. Opportunities to 'learn leadership' are sometimes hidden and what one learns from these opportunities is not always easily accounted for. Educators will discuss three Maine 'teacher leadership' experiences and describe their commonalities and uniqueness.

RM: Lapoint 216

12. Connecting Maine's Classrooms to their Communities through Citizen Science – *STEM CAREER PATHWAYS STRAND*

Facilitator: Morgan Cuthbert, Frank H. Harrison Middle School

Speakers: Students of the Yarmouth Shellfish Nursery

Description: What makes Maine, Maine? The beautiful State of Maine is composed of rich natural resources (forests, farms, coast, and mountains) and our close knit communities. We want our students to become involved citizens within these communities, understanding the history and importance of place. When students become involved in their local communities authentic and real learning happens. Placed based learning and citizen science strengthen the knowledge base of learning and the bond between the students and their local communities. Students instead of memorizing information have application and gain a greater set of 21st century skill. Come discuss how to strengthen these bonds and share ideas of how to promote this kind of learning, and how high school experiences can facilitate exploration of higher education and careers in STEM.

RM: Kirk Gym

13. 4-H STEM Ambassadors - a multi-layered partnership that (mostly) works - *INNOVATIVE PARTNERSHIP STRAND*

Facilitator: Laura Wilson, University of Maine Cooperative Extension

Speakers:

- Dr. David Champlin, University of Southern Maine
- Dr. Lester French, University of Maine Augusta
- Dr. Vanessa Klein, University of Maine
- Amy Pichette, LearningWorks Afterschool Director, Portland, ME
- Abigail Elkins, Elementary Education student and 4-H STEM Ambassador, University of Maine
- Gregory Kranich, University of Maine Cooperative Extension
- Sarah Sparks, University of Maine Cooperative Extension
- Laura Wilson, University of Maine Cooperative Extension

Description: In this panel discussion we will present the 4-H STEM Ambassador program from the viewpoints of several partners - the University faculty who connect their students to the program, the 4-H staff who coordinate, the community host sites who oversee the youth participants, and a 4-H STEM Ambassador.

RM: Jalbert 15

14. Going the Distance for STEM! - *INNOVATIVE PARTNERSHIP STRAND*

Facilitator: Jennifer Therrien, Challenger Learning Center

Speakers: Moderator: Laurie Bragg, Maine EPSCoR

Panelists:

- Jennifer Therrien, Challenger Learning Center of Maine
- Shawn Laatsch, Emera Astronomy Center & Jordan Planetarium
- Carla Scocchi, University of Maine Cooperative Extension /4-H Hancock County

Description: Panelists from the Challenger Learning Center of Maine, Emera Astronomy Center & Jordan Planetarium, and UM Cooperative Extension / 4H will explain how collaborations are mutually beneficial and how Maine classrooms can benefit! Multiple resources and programs will be highlighted during this panel presentation. In various capacities, both the Challenger Learning Center of Maine and the University of Maine have partnered with schools, organizations, and each other over the years. This panel presentation is dedicated to sharing successful collaborations focusing on our current partnerships. The three panelists and moderator will share information on numerous collaborations and discuss how schools and groups throughout Maine can maximize students engagement in STEM by becoming part of projects of which the general public may not be aware. Panelists from the Challenger Learning Center of Maine, Emera Astronomy Center & Jordan Planetarium, and UM Cooperative Extension/4-H will explain the mutual benefits of collaboration and explain how Maine classrooms can benefit from current partnerships such as Emera and Challenger's "Going the Distance for STEM" and more!

RM: Kirk Auditorium

15. Unpacking the “We Belong Here Report” – A Toolkit for Equitable STEM Education in Maine – EQUITY IN STEM STRAND**Facilitator:** Ruth Kermish-Allen, MMSA**Speakers:**

- Meagan Sway, Policy Council at ACLU

Description: The 2017 Report, “We Belong Here”, focused on identifying and eliminating inequity in education for immigrants and students of color in Maine. This session will share the findings of the report, the strategies for serving minority students, and lessons learned that could translate to STEM education initiatives in Maine. The session will spend half of the time sharing the report and the second half will be a facilitated discussion about how the findings translate to current and future STEM education.

RM: Jalbert 410**16. Bringing Maine into the 21st Century with computer science education – PRE-SERVICE & IN-SERVICE STRAND****Facilitator:** Jason Judd, CS Task Force**Speakers:**

- Tom Keller, MMSA
- Sean Wasson, Director of Social Media, Maine CSTA

Description: Maine technology based businesses are citing great needs for employers with computational thinking skills. An introduction to computer science education in K-12 would provide the first step in a career pathway. But incorporating computer science in the school day is problematic. In this session, Jason Judd will present the thinking of a Computer Science Task Force, Sean Wasson of the Maine Computer Science Teachers Association will discuss ways teachers are trained and supported and Tom Keller will describe various options teachers and schools have to meet a goal of computer science education for all students.

RM: Jalbert 15**17. What Will Organizations Look Like in 2025? – STEM CAREER PATHWAYS STRAND****Facilitator:** Kelly Samson Rickert, Director of Workforce Development at Maine Office of Info. Tech.**Speakers:** Lead only

Description: Organizations will face different challenges in 2025 than they do today. Cloud computing, artificial intelligence, automation, virtual reality, and information security will require a different or expanded set of skills. With five generations in the workplace, how will everyone work together, despite the digital divide? It’s all in the preparation. This session explores how

our organizations must evolve to meet the challenges ahead and what particular STEM careers will be key moving ahead.

RM: Kirk Auditorium

18. Your Voice Needed – Provide Feedback & Guidance to the Maine STEM Council –
STEM CAREER PATHWAYS STRAND

Facilitator: James Ritter, Maine State Librarian

Speakers: STEM Council Members

Description: Do you know about the Maine STEM Council and its role in our state? The Maine STEM Council is actively working to establish goals, action items, and a plan for 2019. The STEM Council seeks to understand the pressing policy interests of all constituents in order to effectively offer advice to policy makers as it relates to STEM career pathways and workforce development.

RM: Tower 202

19. Rethinking Maine STEM Pathways: Evidence-based directions towards a future STEM workforce. -
STEM CAREER PATHWAYS STRAND

Facilitator: Scott Byrd, MMSA

Speakers:

- Sue Allen, MMSA
- Mara Tieken, Bates College,
- Bill Zoellick, Schoodic Institute

Description: The panel will facilitate a discussion of STEM pathways in Maine by reviewing the research on rural economies, student motivation and community wide-learning from Maine researchers. We will then lead a discussion on what an inclusive, flexible, and more useful model for STEM career pathways might look like in Maine.

RM: Lapoint 216

20. Educators and Business Leaders Working Together to Support Student Career Pathways –
STEM CAREER PATHWAYS STRAND

Facilitator: Ed Cervone, Educate Maine

Description: Educate Maine, UNUM, and the Maine Principals' Association collaborate to execute the Education Leaders Experience (ELE) which brings together K-16 education leaders for a yearlong experiential journey to learn about the Maine economy through visiting employers across the state. This session will share best practices for building partnerships and discuss how employers and educators can work together to help students explore career pathways.

RM: Tower 303

**21. Supporting STEM Teaching & Learning through Regional Teacher Communities -
*INNOVATIVE PARTNERSHIP STRAND***

Facilitator: Molly Auclair, GMRI

Speakers:

- Tonya Prentice, Woodstock Elementary School
- Kelly Robbins, Medomak Middle School
- Christine Voyer, Gulf of Maine Research Institute
- Molly Auclair, Gulf of Maine Research Institute

Description: The Gulf of Maine Research Institute is working with Maine teachers to support the integration of authentic science into the classroom. Session participants will explore the model being used, Regional Teacher Communities (RTCs), the partnerships behind this model, and the ways they can apply this model to their context.

RM: Tower 302

**22. Targeting persistent problems in STEM Education through the development of a
research centered STEM Education improvement community - *INNOVATIVE
PARTNERSHIP STRAND***

Facilitator: Marina Van der Eb, Maine Center for Research in STEM Education (RiSE Center)

Speakers:

- Laura Millay, RiSE Center, University of Maine
- Marina Van der Eb, RiSE Center, University of Maine
- Kathy Dixon Wallace, Penquis Valley Middle School

Description: Come discuss persistent problems in STEM education and learn about how a statewide researcher practitioner community has targeted three persistent problems and what was learned. Together we'll share strategies for targeting these persistent problems and explore how these problems have evolved to present our community with new challenges.

RM: Jalbert 500