Science Update

February 2018

This periodic enewsletter from the Minn. Dept. of Education (MDE) is sent to a few email lists, including the Minn. Science Teachers Assn. (MnSTA) and district/organization contacts. We encourage you to forward this to other teachers and science leaders. Archived editions are at this site. See MDE contacts at the end of this document.

Note: MDE does not endorse any resource or event that is not conducted by MDE.

* indicates an item that was not in the previous edition

News

*Science of the winter Olympics

This Minnesota Science Teachers Assn. website has links for several resources for integrating the science of the winter Olympics into your classroom.

*Black History Month resources

Science NetLinks and AAAS have developed a number of resources that will help you honor the achievements and scientific work of African Americans. Consider using these linked resources in your classroom.

PBS Learning Media has NOVA videos and stories of accomplished African American Scientists and their work, including Percy Julian and Neil deGrasse Tyson at their Black History Site.

*Science MCA item writing

Apply to participate in the process of developing scenarios and items for the Science MCA and receive compensation for your work.

- Attend five required training/work days June 19 (virtual), June 27-28 and July 17-18 in Roseville, MN.
- Work independently on scenario and item writing between June 19 and July 18.
- Edit work independently and submit final Science MCA scenarios and items online before August 17.

Benefits

- Collaborate with science colleagues from across the state to create quality assessments that impact 60,000 students per grade.
- Receive training on skills and practices that support strong classroom assessment.
- Receive compensation and Continuing Education Units (CEUs).

To apply complete this short questionnaire by March 16. For more information contact jim.wood@state.mn.us or dawn.cameron@state.mn.us

Teacher Events and Workshops

*Science and Engineering Practices in Action (SEPA) Workshops

The regional directors of the Minnesota Science Teachers Association (MnSTA) are facilitating introductory workshops on new professional development modules that are intended for local groups of teachers, such as PLCs. The resources for group activities and discussions, including videos of classroom instruction, are delivered online and the groups can select members to be facilitators. Most of the events are about two hours in an evening and Free. Not only will you learn how to use these practices in your teaching, you will network with teachers from your region. Email the contact person for more information.

St. Peter, Feb 8, dbolslien@stpeterschools.org (Dave Borslien)
Roseville, Feb. 9, John.c.olson@state.mn.us (for district science leaders)
Eagan, Feb. 14, Cathy.kindem@district196.org
NW MN, Feb. 28, Katie.melgaard@gmail.com
NE Minn, TBD, jgagner@proctor.k12.mn.us (Jenny Gagner)
St. Cloud Area, TBD, karen.bengston@isd742.org
Moorhead Area, TBD, tschmitt@barnesville.k12.mn.us (TJ Schmitt)
Montevideo, March TBD, jbrady@montevideoschools.org (Jeremy Brady)
Twin Cities, TBD, Claire.hypolite@mpls.k12.mn.us

For information about implementing these modules in your school or group of teachers, contact lee.m.schmitt@gmail.com.

Schoolyard Gardens Conference, March 2, Chaska

Schoolyard Gardens provide an incomparable, hands-on opportunity for students to meet academic standards, engage with community partners, learn about agriculture, healthy eating, cultural competency, and connections with natural systems. Whether you are a beginner or schoolyard garden veteran, join us at the Minnesota Landscape Arboretum to learn innovative strategies for sustaining and engaging diverse learners in a thriving schoolyard garden. Conference Webpage.

Talk Climate Institute, March 12 – 13, St. Paul

Join Climate Generation: A Will Steger Legacy for this two-day intensive workshop designed to empower people to talk about climate change. Understand the powerful factors that shape opinions, gain the practical skills needed to influence behavior, and inspire commitments to solutions.

- Learn about climate change and how to decipher credible sources
- Understand what influences people to make decisions and how to communicate effectively to inspire solutions
- Cultivate your own personal climate story and learn how to use it as a tool to build understanding
- Learn about innovative solutions and commit to taking action on the individual and community level

More information at this link.

***Project Learning Tree Workshops, March 24, April 17, 21, Bloomington, Rochester, Henderson**

This workshop is designed for teachers and educators of students in grades K-8. PLT uses trees, forests, and the environment as a window to the world to teach math, science, language arts, social studies, and art. Fun, engaging activities are correlated to Minnesota academic standards and the Common Core for ELA and math.

Participants get:

- Hands-on instruction
- PLT K-8 Activity Guide with 96 lessons
- 6 CEUs
- Many supplemental resources from the DNR

Online workshops are also available. More information on PLT workshops is at this MN PLT website.

*** Engineering is Elementary, April 11 – 13, St. Paul**

The Science Museum will be hosting a 3-day Institute for professional development providers to prepare them to facilitate Engineering is Elementary© (EiE) professional development workshops for teachers in their school, district, or state. You'll develop a deep understanding of the pedagogy and structure of the EiE curriculum. And you'll take away a large collection of valuable resources to help you facilitate your own EiE workshops. More information is at this Science Museum site and this Eventbrite site.

***CDC Tomorrow's Disease Detectives, April 26-27, St. Louis MO**

The **Centers for Disease Control and Prevention (CDC)** is recruiting teachers and education leaders to bring public health into classrooms across the United States and beyond. CDC is partnering with the Association of Schools & Programs of Public Health (ASPPH) to offer three, 2-day Science Ambassador regional training workshops **FREE OF COST**. Learn strategies to teach public health concepts and inspire interest in public heath careers.

Topics covered include:

- Population health: Opioid overdose epidemic & obesity epidemic
- Infectious disease: Pandemic Influenza, One Health, and zoonotic disease
- Applied Epidemiology: Investigating an outbreak like a disease detective
- Public health careers: The path to becoming a disease detective

For more information visit this CDC site.

***Driven to Discover: Citizen Science 2018, June 25-29, July 9 – 13, St. Paul and St. Peter**

Immerse yourself in authentic field science with University of Minnesota scientists and deepen your classroom practice for full scientific investigations including analyses and communication. We use established citizen science projects as springboards to engage students in ecology research that inspires unique investigations. Work with scientists with expertise in dragonflies, pollinators, birds and phenology.

* Week 1: June 25- June 29 (Monday June 25 at University of Minnesota St. Paul campus, 4 days/ 3 nights at Gustavus Adolphus College in St. Peter, MN June 26-June 29)

* Week 2: July 9-13 University of Minnesota St. Paul Campus

* School-year meetings and follow-up

You will receive a stipend or credits, field equipment, school-year support, and opportunities for student projects. Go to this Univ. of Minn. site for more information.

Institute for Climate Change Education, June 26-28, Collegeville

New: Scholarships now Available: Through the contributions of several generous donors, thirty teachers will receive full-registration scholarships and limited funding for lodging and travel. Priority will be given to first-time attendees and grades 6-12 teachers with demonstrated need. Scholarship Application site.

Join a network of teachers from across the country dedicated to bringing science, critical thinking, and problem solving about climate change into the classroom!

Participants will have the opportunity to:

- Hear from experts and scientists on their research on climate science and climate change solutions
- Dive deep into Climate Generation's Next Generation Climate curriculum, a six lesson, interdisciplinary, middle school climate change curriculum that has students investigate the cause of the global temperature change, research the major repercussions of climate change, and find out how they can monitor and minimize those repercussions
- Experience Minnesota's biomes in St. John's University's 3,000 acre Arboretum, learn how they use their solar array as a teaching tool, and tour LEED certified buildings

Visit the Climate Generation workshop website for more details and registration.

Materials Science Research Experience for Teachers, July 5 – Aug 10, Univ. of Minn.

Research Experience for Teachers (RET) is a program that allows teachers to actively participate in current research with one of the faculty's research groups and design standards-based classroom activities from these experiences. Each RET participant will work under the direction of a specific principal investigator (PI) with post-doctoral/graduate students from the PI's group. Throughout the summer and into the subsequent academic year(s), teachers will work with the Teacher Research Coordinator (TRC), who will coordinate the activities of the teachers during the summer and oversee the completion of a standards based curriculum element.

Teachers will be encouraged to participate for two consecutive summers in order to continue research and refine curriculum elements. The RET provides a $6000 stipend and a $600 supply fund. Applications are Due Feb. 15.

Minnesota Modeling Instruction Workshops, July 9-20, Shokopee

Shokopee High School will host three different Modeling Workshops this summer:

- Mechanics – Jim Reichling and Eric Gettrust
- Chemistry – LeeAnn Richardson and John Vaden
- Biology – Anita Schuchardt
    - July 16-20 only

Contact Casey Rutherford crutherf@shakopee.k12.mn.us For more information go to the Workshops website or Modeling Instruction website

***ZOOMS teacher workshops, August 6-9, Apple Valley**

Through the Minnesota Zoo's Math and Science (ZOOMS) Program, students and teachers discover just what it takes to engineer a modern zoo. Funded by 3M, ZOOMS provides both teachers and students the opportunity to apply important science, technology, engineering, and math (STEM) concepts to real world situations using the Minnesota Zoo as a context. Through topics such as Engineering FOR Animals (exhibit design), Engineering FROM Animals (biomimicry), and Engineering BY Animals (animals as engineers), teachers and students are challenged to consider and tackle the complexities in both the natural world and constructed environments.

The ZOOMS program supports teachers with integrating standards-based ZOOMS resources, design challenges, and field trips into their curriculum to better equip students with the STEM skills to engineer and problem solve just like zookeepers, exhibit designers and conservationists at the Minnesota Zoo!

Teaching computer science workshop, St. Paul

Twin Cities PBS (TPT) is currently recruiting teachers of grades 6-12 to participate in FREE Code.org professional development. This training prepares you to teach computer science courses at your school.

Teachers can participate in Code.org's Computer Science Discoveries (grades 6-10) or Computer Science Principles (grades 9-12). Teachers do not need a background in coding, math, or science to participate.

Code.org's free professional learning programs feature:

- One cohesive set of resources.
- Teaching and learning in context.
- A collaborative, participant-centric approach.
- A nationwide community of educators working to change the face of computer science education.
- Ongoing support from Minnesota based Code.org facilitators.

The 2018 Code.org PD begins with a five-day, in-person summer workshop, with four additional one-day follow-up workshops throughout the 18-19 school year. If you are interested in learning more about TPT's Code.org programming please contact Program Manager Alex Dexheimer at adexheimer@tpt.org

Teacher and School Awards and Opportunities

Presidential Award for Elementary Math and Science Teachers

Nominate exemplary science teachers (including yourself) for the Presidential Award for Excellence in Mathematics and Science Teaching. This is the most prestigious award in this field and includes recognition activities in Washington DC and a $10,000 award. **This year, teachers of grades K-6 are eligible to apply.** The application describes content understanding, instructional strategies, assessment practices, professional development and leadership. The process of preparing the application provides professional growth. The application is due May 1. For information go to the PAEMST website.

School Programs and Instruction Resources

*Celebrate Darwin's Birthday

Darwin's birthday on February 12th is an opportunity to remind students of the importance of evolution in explaining many phenomena. Some good sources of resources for teaching about evolution are the National Science Teachers Assn., the National Center for Science Education, and the Frameworks for Minnesota Science and Mathematics Standards.

The Science Museum of Minnesota has their Darwin Day event on Feb. 10, noon – 4 with family-friendly presenters and hands-on activities all afternoon. Plus, author Jonathan Tweet will be on site to share some activities and read his book, *Grandmother Fish*. Regular admission to the museum is required. Darwin Day website.

*STEM Teaching Tools

STEM Teaching Tools are short briefs designed to help educators address common challenges as they adopt the new vision for science education in the NRC Framework and resulting Next Generation Science Standards (NGSS). These tools are helping thousands of educators across the country align their teaching with best practices from both research and teaching.

STEM Teaching tools are:
* co-written by researchers and educators.
* easily downloadable as PDFs.
* updated regularly at stemteachingtools.org, with new briefs created in response to educator needs.
MDE science staff are involved in developing and utilizing some of these resources.

Grants for AP and IB STEM courses

The Minnesota Department of Education has funding available to Minnesota school districts and charter schools to encourage low-income and other underserved students to participate in advanced placement and international baccalaureate STEM programs.

All Minnesota public school districts and charter schools that have a free and reduced lunch student population of greater or equal to 40% at each school that will be eligible for the grant.

For information go to this link and search for *Competitive grant opportunity to increase science, technology, engineering and math course offerings.*

***Field trips at The Works Museum**

Experience exciting hands-on engineering activities and science fun with your elementary aged students. Explore interactive experiences in the Museum - located on one easy-to-supervise level. Add a workshop to your field trip for more engineering fun. All of our workshops support the Minnesota K-12 Academic Standards in science. Topics include Light and Kaleidoscopes, Circuit Explore, Mixing Molecules, Motor Power, and many more!

Interested in setting up a workshop but can't come to The Works? We can bring the STEM fun to your school with a visiting workshop, a residency, or a Family Engineering Night. Click here for more information.

***FREE Project Wet book for Minnesota**

Minnesota Project WET is offering a new book for educators, *Water Ways: A Minnesota Water Primer and Project WET Companion*. This book is specifically designed for use by classroom teachers, informal educators, and anyone interested in learning about water in Minnesota.

Water Ways is a 150 page book with content on water science basics, Minnesota's rivers, lakes, groundwater, wetlands, life in water, human use of water, challenges to water resources, and water policy. Each chapter includes suggested Project WET Activities, career profiles, classroom activities, field-trip suggestions and resources. You can download the complete book as a PDF file at this link.

Student Programs, Awards and Competitions

National Youth Science Camp – Inform your seniors

Two Minnesota students completing their senior year will spend three weeks in July in the mountains of West Virginia with **all expenses paid**. They will interact with students selected from all states and several countries as they explore many science topics, meet prominent scientists and collect field data. In addition they will have selections of canoeing, horseback riding, camping and other recreational activities. Teachers should encourage students with leadership qualities, an interest in science, and a love of the outdoors to apply. There are often few applicants. This award is coordinated by MDE. For information go to this site or contact john.c.olson@state.mn.us. The deadline is March 1.

***Tech Fest at the Works, Feb 24, Bloomington**

Get ready to dive into the world of technology and engineering at The Works Museum's annual Tech Fest family event. With dozens of hands-on activities led by real scientists, engineers, and educators, families can spend the day learning and exploring together. Whether it's exploring solar power, trying their hand at biomedical engineering, or programming robots, kids will leave inspired and excited about engineering!

***Next Gen Engineers, April - May**

Next Gen Engineers is a 6-week program that meets on Saturday afternoons at The Works Museum. Each session will introduce 6th and 7th graders to the real world of engineering through fun activities that develop collaboration, persistence, and problem solving. For the Spring Session, the club will meet from 1-4 p.m. on April 14, 21, 28, May 5, 12, 19, 2018. Applications for the Spring Session are due March 29.

***Materials Camp at U of M, June 19-22, Minneapolis**

The MN ASM materials camp will provide a hands-on experience into the world of materials science and engineering for students entering their junior or senior year in high school. The four day camp is under the direction of industry and education based "Materials Mentors." Students receive free meals, tuition, knowledge and entertainment. This is a competitive application process for students with basic knowledge of algebra, chemistry and physics and an interest in applied science. The application is due March 31.

***EX.I.T.E Camp for girls, July and Aug dates, Bloomington.**

The EX.I.T.E. (EXploring Interests in Technology and Engineering) Camp is a 5-day summer STEM camp for girls with disabilities who are entering grades 6-9. It's a fun, dynamic, educational program that provides a supportive environment for girls to focus their abilities in the areas of science, technology, engineering, and math. Camp encourages future engagement with these subjects and helps girls discover the range of possibilities that exist through amazing experiments, activities, and mentors. Campers learn how fun these subjects can be and many make friendships that last beyond camp.

This year's camp dates are July 30, August, 1, 3, 7 and 9, 2018. Please contact Tina Hanson at tina.hanson@pacer.org for more information. They are also seeking to fill teacher positions.

Genesys internships for current HS juniors

Genesys Works is a competitive professional skills development and paid internship program for incoming high school seniors. We provide an opportunity to gain real-world skills like public speaking, Microsoft Office, business technology, and more – all while having fun!

Genesys Works provides a **paid corporate technology internship** where students will work for 12 months at a top Twin Cities company like 3M, Medtronic, General Mills, or Ameriprise Financial, all while earning $12,000 their senior year! We also provide college and career support through our college access programming in which 100% of our students are accepted to college, and we guarantee all participants acceptance, too! Applications are now being accepted until March 1 through this Genesys website. You may call their office with questions (651)-789-0088.

Clean Tech Competition

The **Clean Tech Competition** is an international research and design challenge for 15-18 year old pre-university students. This is an educational opportunity for students across the world that challenges students to be innovative while encouraging their passion for the sciences. The 2018 challenge, Solving Climate Change, asks students to develop a clean technology solution to the many problems associate with climate change. Teams consist of 1-3 students plus adult team leader that develop a written proposal. There is no limit to the number of teams per school and there is not entry fee. Visit the competition website for more information. Registration deadline is March 16

Minnesota Competitions and Programs

Many competitions, out-of-school programs and field trip opportunities are posted at the Mn-STEM website and listed in the Reach for the Stars Catalog of Programs and Activities.

MDE Science Contacts:

Dawn Cameron, Science Assessment Specialist
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Doug Paulson, STEM Integration Specialist, @DPaulsonSTEM
Jim Wood, Science Assessment Specialist
Send submissions for the Science Update to John Olson

Other Minnesota Links:

Minn. Dept. of Education Science Page
Minn. Science Teachers Association
Frameworks for MN Science and Mathematics Standards
Get – STEM Connections between schools and businesses
Mn-STEM STEM programs and resources for families, schools and community
Sharing Environmental Education Knowledge environmental education resources
Minnesota Academy of Science: Science Fair, Science Bowl and other competitions
Mn DNR Education website: Curriculum, professional development, posters, etc.