



## Science Update April 2017

This periodic update 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. 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

### \* **Water Action Week April 17 - 24**

The week of April 17, 2017, is Water Action Week in Minnesota. Clean water is important to everyone in Minnesota. The beauty of our state as well as the quality of outdoor recreation is defined by our wonderful lakes and rivers. Providing clean, safe drinking water is the most important factor for our public health. Governor Dayton has visited school classrooms, water treatment facilities, research institutions and farms to encourage Minnesotans to learn more about the challenges facing our waters, and empower every individual to take action in their own lives to be part of the solution.

Your school can be a part of this effort. H2O for Life provides useful classroom resources that can be used as part of a one-week educational awareness campaign in schools around water. The presentations consist of short activities, videos, school announcements or discussion questions for a 5-15 minute daily, five-day conversation about water. [View the resources](#), which are broken out into separate modules for grades K-1, 2-3, 4-5 and secondary. Learn more about the governor's Year of Water Action at [this site](#).

### \* **March for Science – Minnesota, April 22, St. Paul**

March for Science - Minnesota is an upcoming event in support of evidence-based research in education and industry, pro-science programs, the health of citizens and the environment and quality science education. The march will take place on Earth Day, April 22, 2017 in Washington DC and around the country including St. Paul MN. March for Science is a non-partisan, volunteer-based organization that is concerned by efforts to cut support to science, engineering, and higher education, issue gag orders against scientists, and continue to deny basic science as policy positions. The march has gained the endorsement of NSTA, MnSTA, SciMathMN and many science organizations. Details and updates are at [this website](#) or Twitter @ScienceMarchMN. Satellite marches are planned for 12 cities in Minnesota, [see the list at this link](#).

### **Chemical Disposal Service**

The Chemical Safety Day Program is again being offered during the coming spring, summer, and fall months. The program is designed to assist schools and colleges in disposing of unwanted chemicals and hazardous waste from science, art, industrial technology, and maintenance departments. Pick-up are made throughout the state. The program is operated by the University of Minnesota with help from the Minnesota Department of Education. Information on the program can be found at [this link](#). We look forward to making your school a safer place.

## **Teacher Events and Workshops**

### **\* Bakken Teacher Academy, June 19-22, Minneapolis**

*Science Learning from the Works of Scientists* is a year-long program for middle- and high-school science teachers featuring history-of-science resources from The Bakken's special collections library and contemporary science publications. The program consists of a four-day summer institute that continues with workshops during the school year. The summer institute engages participants in practices for reading informational text to enhance science students' understanding of concepts as well as their critical thinking and communication skills. During the school year: participants apply what they learned to design, deliver and evaluate their own action research project for implementing effective reading practices in the science classroom.

Participants will earn four graduate credits in science education from Hamline University. A \$270 stipend is provided for completing the full course, as well as books and other materials and meals/beverages. For more information [visit this link](#).

### **Minerals Education Workshop, June 20 – 22, Ely**

The MMEW is a three-day workshop held annually for K-12 earth science educators that offers short courses and field trips focused on the geology and mineral resources of Minnesota. On the first day of the workshop, participants may choose among 16 different short course topics taught by professional geologists, academics, government scientists, and K-12 educators. Many of the courses introduce curriculum ideas for various grade levels. The second and third days of the workshop will involve field trips designed to familiarize participants with the geology and mineral resources in northeastern Minnesota.

Participants will receive a variety of resource materials including rock and mineral samples, lesson plan ideas, posters, maps, videos, and other useful information. Cost is \$40. Information and registration are at [this site](#).

### **Driven to Discover: Citizen Science 2017, June 26-30, July 10-14, St. Peter and St. Paul**

Immerse yourself in authentic field science with UMN scientists AND deepen your classroom practice for full scientific investigations that include analysis and communication. We utilize established citizen science projects as spring-boards to engage students in on-going ecology research that inspire their own investigations. Our goal is to have student work reflect the language and mathematics of science. Join a collaboration between the UMN Monarch Lab and UMN Curriculum and Instruction Department to strengthen your teaching of critical STEM content, current ecology research, and using claims, evidence and reasoning to further science literacy within your classroom.



The first four days are at Gustavus Adolphus College and remaining days at the University of Minnesota. There are additional meetings and support during the school year and Participants receive a \$2266 stipend or 3 graduate credits, equipment, supplies and more benefits. See more information at [this site](#) or contact Sarah Weaver at [weave048@umn.edu](mailto:weave048@umn.edu)

### **STEM Rivers Institutes, June 26 – 28 or July 24 – 26**

Hamline University presents FREE, three day field-based professional development opportunities that inspires, educates, and prepares 3rd-8th grade teachers to engage students in STEM disciplines through hands-on, inquiry-based investigations at local watersheds. Details and information are at [this website](#).

St. Croix River Institute, June 26-28, 2017 (Monday-Wednesday)

Mississippi River Institute, July 24-26, 2017 (Monday-Wednesday)

### **Summer Institute for Climate Change Education, June 26-28, St. Paul**



Climate Generation is a recognized leader in climate change education nationally, and we are joining forces with University of Minnesota's Institute on the Environment, where leading climate change research is happening. Hear directly from climate change and solutions experts, and engage with hands-on activities that will help bring these concepts to life in your classroom.

Join a network of teachers from across the country dedicated to bringing science, critical thinking, and problem solving about climate change into the classroom. The location is the University of Minnesota's Institute on the Environment, with the opportunity for a field trip to the Cedar Creek Ecosystem Reserve on the 29<sup>th</sup> (extra fee).

Registration: \$150 (includes breakfast and lunch each day!) Lodging is available (\$48/night single, double/shared \$36) 2 Graduate Credits optional (fee). Click [here](#) for information and registration

### **Minnesota Modeling Instruction workshops, July 10 – 14, Shakopee**

The Modeling Instruction method relies less on presentation and more on engaging students using experimentation to construct and revise scientific models to explain physical phenomena. Workshop being held at Shakopee High School this summer:

- Introduction to Chemistry modeling July 10 – 14
- Introduction to Physics modeling July 10 – 14
- Mechanics Modeling July 17 – 21

For information contact Casey Rutherford [crutherf@shakopee.k12.mn.us](mailto:crutherf@shakopee.k12.mn.us)

### **\* Science Assessment MCA Item Writing Workshop, July 11-13 & August 9-10, Roseville**

Increasing educator involvement in the development of the Minnesota Comprehensive Assessments (MCA) is a priority for the Minnesota Department of Education (MDE). To address this goal, MDE is launching a new workshop called "Building Capacity for Science Assessment: Science MCA Item Writing Workshop" held on July 11-13 and August 9-10.

This new workshop is intended to train and support educators as Science MCA scenario and item writers. In addition to providing training in assessment development and literacy, this workshop includes time for collaboration and feedback on participants work developing Science MCA scenarios and items for field testing in spring 2019. For more information or if you are interested in being a part of this important work, **please submit your application by April 28, 2017 at [this location](#)**

### \* Got Milkweed? FREE Summer Workshop For Educators. July 11-13, Northfield

Monarch caterpillars only eat one kind of plant--milkweed. As monarch butterfly populations are declining and more people are planting milkweed, what is important to understand about this food source? This workshop introduces participants to a distributed research project designed to help students understand evolution and ecology through inquiry about milkweed plants while simultaneously gathering data to answer important scientific questions, such as: "What should we do to slow the decline of the monarch butterfly populations?" and "Does the origin of milkweed seeds affect their growth?"



Participating institutions will plant milkweed seeds from local and non-local populations and gather data on milkweed growth annually in spring and fall to determine whether milkweed populations are locally adapted. Learning opportunities align well with **Life Science Standards** at both **middle and high school levels**. The project requires a one-time collection of common milkweed seeds from a naturally occurring (not planted) local population, space and time to plant 20 or more milkweed plants, and a commitment to work with students annually to follow specific protocols for data collection for multiple years. We offer a \$300 stipend for attendance. Additional funds are available to support travel and lodging, or virtual attendance is an option. More details available [here](#). [Apply Now!](#)

### National STEM Forum & Expo, July 12 – 14, Orlando, FL

The 6th Annual STEM Forum & Expo, *hosted by NSTA*, is a unique, focused event that brings together (informal and formal) educators and representatives from exhibiting companies who are interested in, and who have tools and resources to share that will ensure successful implementation of STEM education into our schools and communities. It is intended to provide resources for educators and organizations seeking to learn more about STEM education, associated outreach programs, partnerships, schools, and curriculum. The keynote speakers is Derek Muller who is best known for the YouTube science channel [Veritasium](#), featuring cool demos and experiments. For more information visit [this site](#).



### Biotechnology/Microbiology for Teachers in the Classroom, July 17-21 and July 24-28, St. Paul

The BioTIC Institute brings middle- and high-school biology teachers together to talk teaching and to get up to speed on the rapid advancements in biotech research, careers, applications, and issues. BioTIC also provides a review and enrichment of inquiry-based practices and curriculum enrichment that support the Minnesota science standards related to cell structure, disease, genetics, and biotechnology.

The Institute provides a two-week summer workshop, two Saturday follow-up session during the school year, a stipend, four graduate credits, board and room for outstate participants and teacher-focused training. For more information and to apply online visit [this site](#).

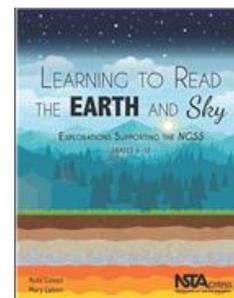
### WaterWorks! A Drinking Water Institute for Educators, August 7-9, Lakeville

Enrich your water-related curriculum, investigate drinking water quality and chemistry, learn about inquiry-based models for your classroom, and find resources within your community. This three-day, hands-on workshop allows grade 4-10 science teachers to gather information from expert presenters about how safe, reliable drinking water is delivered to your community, as well as drinking water issues facing Minnesota. Meals and resource binder provided. Choose between two graduate credits or stipend. Join the ranks of over 350 teachers that have participated in *WaterWorks!* throughout

Minnesota over the last 16 years. Funded by the Minnesota Dept. of Health and the American Waterworks Association. Application and information at [this link](#).

### **\*Online Earth Science Course**

Are you interested in a refresher course in earth science? Earth Science Essentials through Minnesota State University Moorhead is a rigorous self-guided course, also available as an ebook, for science teachers wanting to expand or renew their understanding of the fundamentals of earth science. Russ Colson, co-author of NSTA Press book *Learning to Read the Earth and Sky* is offering this course for science teachers. You can get more information at [this site](#).



### **\* Science House Professional Development – Summer Institutes & Programs**

Join our nationally recognized community in St. Paul this summer during one or more of the following professional development institutes or programs. Our cutting edge professional development approach empowers formal and informal education professionals to create inclusive environments, eliminate disparities, and broaden participation in STEM. Please note, these workshops are fee based and will need to be covered by the participant. For more information, go to [this site](#).

- Addressing Disparities in STEM Education: PAGE District Leadership Program July 10 – 14, plus 3 follow-ups
- The Race Institute for School-Based Teams July 31-Aug 4, & Aug 7-11 (repeated)
- STEM Equity in the Classroom, Aug 14-18,
- Student Engagement in the Elementary Classroom Jun 19-23

### **\* Minnesota Zoo Math and Science (ZOOMS) Program, Apple Valley**



In ZOOMS, students and teachers discover what it takes to engineer a modern zoo. 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! More information at [this site](#).

- STEM at the Zoo for Informal Educators, April 24-26
- ZOOMS Teacher Institute, August 7-9
- Zooms Institute 2.0 August 10
- Many customized programs, classes, design challenges, and field trips are available

## **Teacher and School Awards and Opportunities**

### **\*Give your used textbooks a second life, in Africa**



When John Olson, MDE Science Specialist, went to Liberia last year, he found that library of his school had many books with Minnesota school stamps. He planned his biology lessons with a textbook from Verndale High School and read *Jurassic Park* from Anderson Open School. These had been sent to Africa by a St. Paul based organization, Books for Africa (BFA).

BFA collects, ships and distributes books to students of all ages in Africa. They are the largest shipper of donated text and library books to the African continent. They collect all types of books appropriate for African students. High school and college textbooks are especially needed. As a general guideline, books should be less than fifteen years old. You can drop off books at their St. Paul warehouse or ship them to the Atlanta workshop. For details, contact the [BFA website](#)

## **School Programs and Grants**

### **\*Physics and Science Days at Valleyfair, May, 15, 16 & 17**

The principles of physics come to life as Valleyfair, in partnership with GO4ST8 Physics, offers Physics and Science Days. Students will gain a better understanding of advanced physics and engineering or basic physical science concepts while having fun at the Upper Midwest's largest amusement park. For information visit [this site](#).



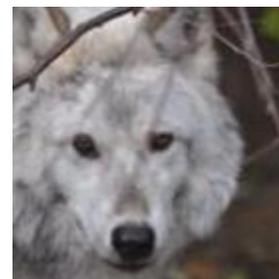
### **\*Engineering Day at Valleyfair, May 31, Chanhassen**

For the first time, Valleyfair is holding Engineering Day featuring our newest attraction, North Star! Students will gain a greater understanding in the field of engineering and get a behind-the-scenes perspective of the creative and mechanical side of Valleyfair.

Engineering Day includes a special seminar from one of the park's experts, Project Superintendent, Mindy Lawrence as well as a local expert, the Senior Structural Engineer, from Barr Engineering Co. in Minneapolis. After the program the students will be able to skip the line and experience what they just learned while riding North Star!

### **Wolf Center Virtual Field Trip**

The International Wolf Center is offering to bring you live educational wolf virtual field trip programs through a simple, easy to use videoconference. The International Wolf Center is a non-profit organization located in Ely, a northern Minnesota town. Our WolfLink virtual field trips provide you with expert wolf educators, a wide variety of wolf-related programming, and the opportunity to observe our ambassador wolves in their enclosure. We offer a variety of programs, suited to various age groups from youth through adults. Wolf Discovery Kits are also available to rent and provide tangible items for participants to experience. Our 2017 rate is \$75 per program! Our programs are offered through the Tandberg system as well as Zoom. Zoom simply requires an internet connection and a computer!



Please visit [this link](#) for more information and to register for an amazing WolfLink virtual field trip, and feel free to contact us by phone or email as well!

## Student Programs, Awards and Competitions

### \*National Summer Transportation Institute, July 17-28, Minneapolis

This free two-week summer day camp for grades 7-9 (as of fall 2017) at the University of Minnesota will introduce you to many aspects of the transportation field. You'll go on field trips around the Twin Cities, participate in hands-on activities and learn from experts about what it's like to work in transportation. You will learn about different parts of the transportation system, experience a driving simulator, design a model bridge and tour transportation facilities. For information visit [this site](#). Application deadline April 17.

### 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](#).

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#### MDE Contacts:

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[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.