

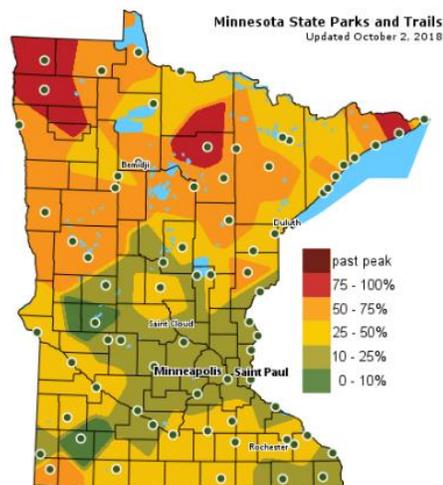
## Science Update

October, 2018

This periodic e-newsletter 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 MnSTA 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



Color changes and standards changes

## News

### \* Preparing for the First Draft of new Science Standards

Your feedback will be requested for the First Draft of the Minnesota Science Standards of 2019. The Standards Review Committee will publish the First Draft about November 9<sup>th</sup> and the feedback period will be until February 26<sup>th</sup>. The draft and the link for a feedback survey will be provided on [the MDE Science page](#). You will be able to use the survey as an individual or as a group, such as a PLC or district science group.

You should plan to attend one of the in-person feedback sessions to learn more about the background of the draft and participate in discussions. Here are some of the opportunities.

MDE Town Hall meetings. All are 5:30 – 8:00 pm  
Moorhead, Nov. 12, Horizon Middle School  
Roseville, Nov. 13, MDE Conference Center B  
Mankato, Nov. 14, Intergovernmental Center  
Duluth, Nov. 20, Duluth Planetarium at UMD

MnSTA Conference, Nov. 9, St. Cloud. There will be feedback sessions in each strand

MnSTA Regional meetings. Region Directors will conduct feedback and networking sessions. Some that are already scheduled are below. Contact your [region director](#) if there is not one listed for your area. Check with the contact for details.

St. Cloud, Nov 15, 4:30-6:30 pm, St. Cloud District Office, [karen.bengtson@isd742.org](mailto:karen.bengtson@isd742.org)

Staples, Nov 15, 9 – 11 am, Sourcewell, [lisa.pingrey@sourcewell-mn.gov](mailto:lisa.pingrey@sourcewell-mn.gov)

Eagan, Nov. 15, 4:30 – 6:30, Oak Ridge Elementary, [cathy.kindem@district196.org](mailto:cathy.kindem@district196.org)

Duluth, TBD, Jenny Gagner [peder384@gmail.com](mailto:peder384@gmail.com)

St. Peter, Nov. 20, 4 – 6 pm, St. Peter High School, Dave Borslien  
[dborslien@stpeterschools.org](mailto:dborslien@stpeterschools.org)

Montevideo, Nov. 15, 5-7 pm, Jeremy Brady, [jbrady@montevideoschools.org](mailto:jbrady@montevideoschools.org)

Alexandria, Nov. 13, 5 – 7 pm, Alexandria High School, Kalina Haley,  
[hkalina@alexandria.k12.mn.us](mailto:hkalina@alexandria.k12.mn.us)

District Science Leader Network, Nov. 13, 9am–noon. MDE Roseville. [John.c.olson@state.mn.us](mailto:John.c.olson@state.mn.us)

You may start to prepare for the first draft by becoming familiar with the primary reference document that is being used by the committee, *A Framework for K-12 Science Education*, especially chapters 1 and 2. This document is available as a free download at the [National Academy Press](#). More information about the *Framework* and how it may impact new standards is in a series of articles at the [MnSTA Science Standards website](#).

### **\*MDE Assessment Workshops**

This fall, the Minnesota Dept. of Education will provide a full-day workshop designed for teachers and District Assessment Coordinators at various locations across the state and will be joined by Dr. Michael Rodriguez, Professor of Educational Measurement and Campbell Leadership Chair in Education and Human Development from the University of Minnesota. The workshop will include a discussion on the formative uses of assessments, practice time with classroom assessments, and an update on the redesign of the Benchmark Reports. The day will finish with a focus group for teachers on the Testing 1, 2, 3 website and work time for DACs with Dr. Rodriguez. Lunch will be provided to all participants who attend the full-day workshop. [Details, Schedule and Registration](#).

### **District Science Leader Network**

District-level staff who have responsibility for science education across their district are invited to participate in this network. Some examples are curriculum coordinators, science coaches, TOSAs, and charter school/private school lead teachers. There will be 5 meetings this year for three hours in the morning, beginning September 21. This year the focus is on leading district educators in feedback for the science standards review and preparing teachers for changes that are likely from revised standards. There will also some out-state meetings. If you would like to receive announcements of the meetings, contact [john.c.olson@state.mn.us](mailto:john.c.olson@state.mn.us).

### **Updating the Minnesota STEM Teacher Center (Frameworks website)**

The [Minnesota STEM Teacher Center](#), developed jointly by MDE and SciMathMN has recently undergone an update making it more accessible and useful for teachers and administrators. With generous support from 3M the site's underlying software was brought up to date, the content was brought in line with ADA accessibility requirements, and the content made more mobile friendly.



The STEM Teacher Center houses the *Frameworks for Minnesota Science and Mathematics Standards* which provides resources for each standard and benchmark. Users are provided a vignette of a lesson, information on common student misconceptions, resources for instruction, guidance on assessment, and support on differentiating their classroom practice for special education students and English Language Learners, along with those identified as gifted and talented.

## Requirements for Safety Training of Science Teachers

The National Science Teachers Assn. (NSTA) [Safety Blog](#) for August describes the required safety training that must be provided by your employer. This includes initial training for new science teachers and other staff who work with chemicals and periodic updates. The Blog describes specific requirements and available resources. Review this with your science teachers and show it to your school administrator.

## Teacher Events and Workshops

### \*Lake Superior Shipboard Science, Oct 8, Duluth



Join UMD Large Lakes Observatory scientists to see below the surface of Lake Superior on the Blue Heron research vessel. Have you ever heard of Lake Superior's "ring of fire?" Graduate student Kirsten Rhude and Dr. Bob Sterner of LLO invite you to participate in their research to better understand why this depth zone of Lake Superior is such a hotbed for *Diporeia*. This sediment-dwelling macroinvertebrate is a critical food source for Lake Superior native fish and is *disappearing* from many of the Great Lakes! Substitute coverage may be available. For application contact Cindy Hagley, [chagley@d.umn.edu](mailto:chagley@d.umn.edu).

### \*Exploring the mysteries of Dark Matter, Oct 11, Minneapolis

Profess Prisca Cushman from the Minnesota Institute for Astrophysics is presenting this public lecture at 7 PM at the Physics Building room B50 at the University of Minnesota. She will share the progress over the last decade in the search for dark matter and where we go from here. [More Information](#).

### \*Outdoor Education and Raptor Lab Teacher Workshops, Oct. 18, 19, Nov.27, Northern MN sites

Learn to use the *Raptor Lab* a free interactive online learning environment that models the process of scientific investigation in real-world settings through the active role-play of different scientific careers involved in veterinary care and wildlife rehabilitation. Then provides a platform for students to team up, investigate outside, and share their own inquiry-based investigations online. Raptor Lab is appropriate for students from sixth grade through high school. This free day-long workshop will look at the *Outdoor Investigator* module of the *Raptor Lab* and provide techniques to bring students outside and do scientific inquiry. All educators of any grade are invited. [Details and registration](#)

Oct. 18, Wolf Ridge, Finland

Oct. 19, Fond du Lac College, Cloquet

Nov. 27, Deep Portage, Hackensack

### EdCamp Math & Science, Oct. 19, Oakdale

Edcamp is a form of *unconference* designed specifically for teachers and their needs. The agenda is created by the participants at the start of the event. Rather than presentations, people are encouraged to have discussion and hands-on sessions. Edcamp Math Science MN is designed to focus on topics specifically around math and science education within the Edcamp framework. The event is at Tartan High School, 9am – 3 pm. Watch the [EdCamp site](#) for information updates.



### **\*Project learning Tree Early childhood Workshop, Oct. 27, West St. Paul**

Explore hands-on, nature experiences designed for children ages 3-6 and get PLT's award-winning [Environmental Experiences for Early Childhood](#) book and music CD. The book is a guide for educators to create safe, age-appropriate, indoor and outdoor nature-based "experiences" for young children. More than 100 experiences are designed to engage children with experiences centered on cognitive reasoning, math and manipulatives, music and dance, art, songs and stories, outdoor play, snacks, discovery tables and learning centers, guided neighborhood walks, and family connections. Stay later and explore Dodge Nature Center's trails and acclaimed preschool play area. \$30, includes book, music CD, and CEUs [Register](#) by Oct. 19.

### **Discovery Education Three-Dimensional Learning Academy, Oct. 30, Minneapolis**

White Bear Schools and Discovery Education are sponsoring a free workshop 4 – 7 pm at the Surly Brewing Company.

- Engage: Fermenting phenomena led by Surly's head brew master
- Explore: Crafting 3-dimensional learning experiences led by Dr. Robert Corbin
- Explain: Tapping into inquiry

#### [Information and Registration](#)

### **\*The MnSTA Conference on Science Education, Nov 8-10, St. Cloud**



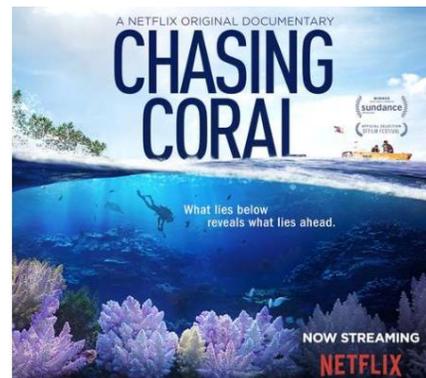
Pick up new tips, ideas and resources for your teaching and connect with colleagues from across the state. This year's theme is based on water resources, with a keynote by [Steve McComas](#), *the Lake Detective* of Blue Water Science. Steve has been working on lakes and streams for over 40 years and specializes in lake management and lake restoration projects.

The conference begins Thursday evening with a private screening of the Netflix documentary *Chasing Coral* at the historic Paramount Theater. The Jeffers Foundation will offer *Team Teaching with Mother Nature*, with strategies for effective teaching in the outdoors.

There will be sessions all day Friday with content area strands. The Strand keynotes are:

- Biology: Emily Mohl from St. Olaf College
- Chemistry: Alan McCormick from University of MN
- Earth Science: Bryce Hoppe from MN State University- Mankato
- Elementary: Julie Jackson from Texas State University

Each strand will include a session for feedback for the first draft of the next Minnesota science standards.





A new Friday feature is an [elementary share-a-thon](#) of instructional ideas by participants. After a busy day enjoy an evening social event and dining at local restaurants.

Saturday brings longer workshops and license renewal sessions. More details and registration are available on the [Conference Website](#).

### **\*MN Earth Science Teachers Conference, Feb 1, Plymouth**

This annual [Mn Earth Science Teachers Assn.](#) conference features a keynote on inclusive science from Native Skywatchers. Concurrent session topics include Skywarn storm spotting and severe weather, bedrock geology and groundwater management, authentic learning and assessments, and ESRI Story Maps. The Thursday evening pre-conference session features the Como Planetarium and dinner at Gabe's by the Park.

### **\*Global Explorations for Educators**

Founded in 2007, [Global Exploration for Educators Organization](#) (GEEO) is a non-profit organization that has sent over 2400 teachers abroad on adventurous travel programs. With GEEO educators can earn professional development and graduate credit while seeing the world. GEEO's trips are 5 to 23 days in length and are designed and discounted to be interesting and affordable for teachers. In addition to amazing tour leaders, many of the programs are accompanied by university faculty that are experts on the destination.

GEEO is offering the following travel programs for 2019: Borneo, Bolivia, Bangkok to Hanoi, Camino de Santiago, Central Europe, The Galapagos Islands, Greece, Iceland, China, India and Nepal, Jordan, Egypt, Ethiopia, Tibet, Madagascar, Ireland, The Baltics, Paris to Rome, Multi-Stan, Sri Lanka and The Maldives, Morocco, Mongolia, Peru, Vietnam/Cambodia, and, The Balkans. The registration deadline is June 1st, but space is limited and many programs will be full well before the deadline.

### **University of St. Thomas Engineering Resources**

The [Playful Learning Lab](#) at the University of St. Thomas is scheduling free "Educator Playdates" for the coming school year on the third Tuesday of each month. Each session will include a hands-on project led by Playful Learning Lab students, as well as ample time for discussion. We will also have a Show and Tell and we invite you to email us if you have something you'd like to share! We will also have a snack and lots of time to meet each other. Contact Dr. AnnMarie Thomas at [aphomas@stthomas.edu](mailto:aphomas@stthomas.edu) with any questions.

Also check out [OK Go Sandbox](#), a collaboration with the band OK Go, which created engaging, fun-filled STEM-focused videos for use in K-12 classrooms (and beyond).

The St. Thomas [Center for Engineering Education](#) offers engineering courses and a Master degree program in engineering education.



## Teacher and School Awards and Opportunities

### \*Green Ribbon Schools Award

Be recognized for environmental and sustainability efforts and spur your school to greater accomplishments. This award honors schools, districts and colleges who are

- reducing energy and resources consumption
- improving health and wellness
- providing effective environment education

Awardees receive a plaque for the school, local recognition, use of the Green Ribbon School Logo on their website, and an invitation to the national award ceremony and related activities in Washington, DC.



This year the school application has been streamlined to make the application process more open-ended. The information and applications will be soon posted on the [MDE Green Ribbon Schools webpage](#) and are now available from [john.c.olson@state.mn.us](mailto:john.c.olson@state.mn.us).

### \*Knowles Teaching Fellows for early career teachers

The [Knowles Teacher Initiative](#) is accepting applications for their 2019 Cohort of Teaching Fellows. The Knowles Teaching Fellows Program is an intensive and cohesive, five-year program that supports early-career, high school mathematics and science teachers in their efforts to develop teaching expertise and lead from the classroom. Applications for 2019 Knowles Fellowships are due by November 25, 2018.

### Apply for the NSTA Council and Committees

The National Science Teachers Association is seeking applicants for several positions on the Board, Council, and many committees. Most are three year terms. In particular there is an opening for the [region IX Director](#) on the Council representing Minnesota, North Dakota, and South Dakota. For information about the duties and reward and to apply go to the [NSTA nominations page](#) or contact Brenda Walsh, the current region IX Director, [bwalsh@edenpr.org](mailto:bwalsh@edenpr.org).

### Albert Einstein Distinguished Educator Fellowship

The [AEF Program](#) provides a unique opportunity for accomplished K-12 educators in the fields of science, technology, engineering, and mathematics (STEM) to serve for eleven months in Federal agencies or in U.S. Congressional offices, applying their extensive knowledge and classroom experiences to national education programs and/or education policy efforts. Applications are due by November 15, 2018.



## School Programs and Instruction Resources

### \*US Navy virtual field trip to a science lab, October 16

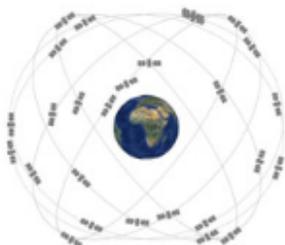
The U.S. Navy will be hosting a free virtual field trip geared towards middle schoolers and will be providing exclusive access to one of their premiere science labs (Space and Naval Warfare Systems Center) on Oct. 16<sup>th</sup> at 1 p.m. eastern at this [webcast link](#). The Navy is encouraging classrooms interested in STEM to join them by viewing a live stream of their scientists performing 7 experiments

that will inform about “Ocean Light and Communication & Invisible Light”. Scientists will explore light in the atmosphere and ocean as well as infrared light and laser systems during this time and will provide your class with a short post event worksheet/quiz.

### \*World of 7 Billion Video Contest

The World of 7 Billion student video contest helps you bring technology and creativity into your middle and high school classes. The contest challenges students to create a short video connecting world population growth to one of three global challenges: preserving biodiversity, sustainable resource use, or human rights. Students can win cash prizes, and participating teachers will receive free curriculum resources. The deadline for submissions is February 28<sup>th</sup>, 2019 – use this [lesson plan](#) to get started now! Full contest guidelines, resources for research, past winners, and more can be found [here](#).

### \*Real-world applications of STEM concepts inspired by GPS.



Free hands-on activities from [GPS.gov](#) for students with no/low costs for materials include stories, videos, presentation materials, and career highlights. Four modules (Earth, Life, Space, Movement) include 12 inquiry-based lessons designed to support the new science standards and the Common Core. Scenarios highlight STEM applications in satellites, orbital space clutter, energy grids, precision agriculture, global supply chains, aviation, weather forecasting, and conservation. “IDEA” (Inquiry, Discovery, Explanation, Application) pedagogy is used with all lessons incorporating real-time and archived data analysis, online simulations, modeling, and the application of geometry and mathematics.

### Climate Science Teaching Resources

[Climate Generation: A Will Steger Legacy](#) is launching the *I pledge to #TeachClimate365* campaign, a challenge to bring climate change into the classroom all year. Teachers post why and how they teach climate on Facebook and Instagram. Climate Gen is also providing a [School Board Resolution Toolkit](#) for students to advocate for climate solutions.



### Computer Science Clubs

[Girls Who Code Clubs](#) are FREE after-school programs for 3rd-5th or 6th-12th grade girls to join a sisterhood of supportive peers and role models and use computer science to change the world. Clubs are led by Facilitators, who can be teachers, computer scientists, librarians, parents, or volunteers from any background or field. Many Facilitators have NO technical experience and learn to code alongside their Club members.

- **6th-12th grade Clubs program:** here’s an overview of the [Clubs curriculum](#) that focuses on a Girls Who Code Project where girls work in teams to solve a real world problem they care about through code.
- **3rd-5th grade Clubs program:** the fun and engaging curriculum is a book club model where students learn from Girls Who Code’s best-selling book [Learn to Code and Change the World](#) and participate in interactive activities that can be run completely offline with optional online activities.

To learn more about Girls Who Code programs, you can [sign up for a Girls Who Code Webinar](#) Oct 3 or email Jackson Thomas at [Jackson@girlswhocode.com](mailto:Jackson@girlswhocode.com).

## MN Zoo's Show us your Mussels Challenge

The [Show Us Your Mussels Challenge](#) offers students in grades 9-12 with the opportunity to learn about the real problems facing our endangered native freshwater mussel populations and what community members can do to help. Students learn how local water quality affects these important species, and the role of mussels in maintaining a healthy aquatic system. Students create digital media campaign to highlight what they have learned and encourage community members to take action. Schools post their projects online to be voted on by the public from February 1-28, 2019. Five winning schools are selected based on the number of votes they receive and the number of people they reach by their campaigns. Participants from winning schools receive a FREE field trip to the Minnesota Zoo including bussing, admission, parking and an interactive session about the Zoo's Mussel Conservation program.

## Student Programs, Awards and Competitions

### Youth Climate Kickoff, Oct. 13, St. Paul

High school students from across the state will gather at Central High School, 10:30 – 4 for the [Youth Climate Kickoff!](#), hosted by [Youth Environmental Activists of MN \(YEA! MN\)](#). . At this youth-led event they will share ideas and learn tools for engaging their schools in climate actions.



### \*Tech Savvy for Girls, Oct. 27, St. Cloud

Learn about careers in Science, Technology, math and engineering. Tech Savvy is a daylong STEM event filled with interactive workshops for girls in grades 5-9, and a simultaneous program for parents. The cost is \$10 per student and includes lunch and giveaways. Online registration is at this [American Association of University Women St. Cloud Branch website](#).

### \*Trailblazers: Women Succeeding in Science and Technology, Nov. 1, Richfield



Million Women Mentors, Keyot, and Best Buy are teaming up to bring a great mentorship event at Best Buy in Richfield 6:30 – 8:30 pm. The event will give women in high school or college the opportunity to explore STEM-related education and career options in an open, collaborative and fun setting! A panel of female STEM professionals will share their experiences and give a glimpse into a day in the life of STEM-related career professionals. Then, attendees will be off to a fun networking session where they can connect with other attendees and talk with STEM professionals about their experiences and the variety of career options available in STEM. [Information and Registration link](#).

### \*Young Scientist Roundtable, various dates, Wayzata

Learn about exciting ideas and developments presented by professors and prominent experts. Since 1992, Young Scientist Roundtable has brought over 250 scientists to thousands of K – 12 students on topics from the hydrogen atom to human joint replacement to food coloring.

All programs are always free and no registration is required. The main presentation begins at 7:00 p.m. and is generally followed by a "Roundtable Part 2" where students can participate in an in-depth discussion and question/answer session with the speaker. [Schedule and speakers](#).

### **\*STEM Award for students of color**

A partnership between the Donaldson Company and the Science Museum of Minnesota recognizes high school students of African American, Latino, Native American, and Asian heritage for their interests and achievements in STEM. Minnesota educators and STEM professionals may nominate a student they teach or mentor and students are welcome to nominate themselves. The deadline is November 5. [More information.](#)

### **Youth Incentive Award for studying beetles**

The Coleopterists Society, an international organization of professionals and hobbyists interested in the study of beetles, has established a program to recognize young people studying beetles. The Society has pledged to provide up to \$600 each year for the [Youth Incentive Award Program](#). The Junior Award is a monetary grant of \$200 and the Senior Award is \$400. Award recipients also will receive up to \$200 (Junior) and \$400 (Senior) of equipment credit from the [BioQuip Products](#) catalog. This is for students in grades 7-12 only. The deadline is November 1.



### **Minnesota Programs and Competitions**

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 Science Contacts:**

[John Olson](#), Science Content Specialist, @JohnCasperOlson

[Jim Wood](#), Science Assessment Specialist

[Judi Iverson](#), 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.