

Science Update

September, 2018



Starting the Science Standards Review

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

News

* Provide input for the Science Standards Review

Your feedback on the 2009 science standards is needed by the Science Standards Review committee. The Committee began their work August 1-3. At their next meeting on September 19th, they will review data on the effectiveness and implementation of the current standards. If you are using the standards for classroom teaching, informal education, teacher preparation or other uses, **please fill out the survey at <https://www.surveymonkey.com/r/PZW8HD7> by September 11**. You will be asked to comment on the quantity and rigor of standards at your grade range and also comment on specific benchmarks. You have the option to submit a group review.

36 teachers, professors, scientists, administrators, informal educators, and community members were chosen for the Science Standards Review Committee. Their names and affiliations are listed at the [MDE Science website](#) (near the bottom of the page) along with the timeline of the standards development. While you are there also review the Assumptions that will guide the next standards.



You may start to prepare for the new standards by becoming familiar with the primary reference document that is being used by the committee, *A Framework for K-12 Science Education*. 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 described in a series of articles at the [MnSTA Science Standards website](#).

*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 them for changes that are likely from revised standards. There will also be some out-state meetings. If you would like to receive announcements of the meetings, contact john.c.olson@state.mn.us.

***MDE Science Staff Changes**

We welcome Judi Iverson as the new Science Assessment Specialist. She previously taught life science in Shakopee for 14 years and was a frequent participant in panels for the development of the MCA in science. She will be working with Jim Wood on statewide science assessments. Dawn Cameron is moving to a supervisor position overseeing the science assessments and many other duties.



Dawn, Judi, Jim

***Funding Opportunity through ESSA**

Each school district or charter school is eligible to receive funds for 2018-19 from the state of Minnesota under the Every Student Succeeds Act (ESSA) block grant program under Title IV Part A. This grant supports activities in three broad areas:

1. Providing students with well-rounded education,
2. Supporting safe and healthy schools,
3. Supporting the effective use of technology.

The school district proposes to MDE how they will spend the money they receive within the guidelines. This is an opportunity to gain funding to improve student learning in science and STEM within the context of well-rounded education or to add technology to support instruction. Contact your district administration soon for more information and to provide your suggestions as the timeline for completing the application will be short.

***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

*Blaine Wetland Sanctuary Open House for Educators, Sep. 10 and 20

All educators are invited to attend a free open house at the Blaine Wetland Sanctuary on Monday, September 10 or Thursday, September 20 from 3-5 pm. The [Blaine Wetland Sanctuary](#) consists of 500 acres of open space with a variety of habitats, making it a living laboratory for researchers, teachers, and students. [Preregister](#) to receive a flash drive with lessons, maps, and science stories specific to the Blaine Wetland Sanctuary.

*Curie Me Away – Musical Story of Madame Curie, Sep. 15 & 16, Minneapolis



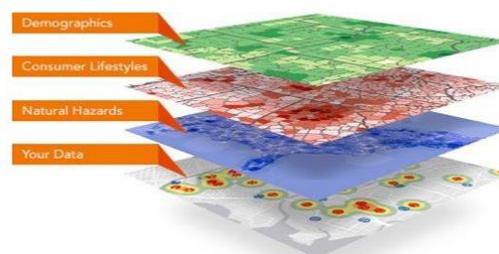
Curie Me Away! weaves core chemistry concepts into compelling lyrical metaphor to tell the extraordinary life story of Madame Marie Curie, a pioneer in the field of Physical Chemistry. Written in collaboration with a chemistry professor, this original musical packs a scientific punch while reaching across disciplines to offer inspiration and insight to students of history, womens studies and social studies. *Curie Me Away!* has performed for the National Atomic Testing Museum and won a "Best of Fest" award at the Great Salt Lake Fringe Festival. The [Bryant Lake Bowl Cabaret Theater](#) is the setting for performances on Saturday and Sunday afternoons.

Free Tickets for the Nobel Conference - *Living Soil: A Universe Underfoot*, Oct. 2-3, St. Peter

The 54th Nobel Conference, *Living Soil: A Universe Underfoot*, is happening October 2 & 3, 2018 at Gustavus Adolphus College. The Nobel Conference invites participants to consider the vast diversity and complexity of soil, and to ponder the challenges we face in protecting this most fundamental resource. Join 4,000 people on campus for one or both days to experience presentations in microbiology, botany, ecology and soil science; Q&A sessions; and hands-on activities for designed for high school students. In addition, to help you prepare students, you may utilize classroom-ready resources with supplemental readings and activities. High School delegation tickets are FREE and may be ordered by calling 507-933-7520. [More information about the conference.](#)

*GIS (computer mapping) Educator Day, October 3, Duluth

Learn about or expand your use of free mapping websites and software in your instruction in science, social studies, and other areas. All schools and youth organizations have access to licenses for Geographic Information Systems (GIS). [Educator Day](#) at the state GIS conference will include training sessions, break-outs, learning sessions, and free lunch. The conference is free and you may be able to get substitute reimbursement.



This year's luncheon speaker will be Matthew Winbigler, a science teacher from Cloquet. Matthew will relate how GIS has affected his teaching and how students are reacting to it. He will bring along a student who was a winner in the 2018 Minnesota on the Map GIS student competition. There will be sessions presented by teachers and professionals for both beginning and advanced online users and specific sessions on Story Maps, Survey123, ORG accounts, Geo-Inquiries and Curriculum topics. For questions about the conference and information about GIS licenses and support contact scott.freburg@state.mn.us or the [MDE GIS page](#).

International Wolf Symposium Educator Day, Oct. 13, Minneapolis

The International Wolf Center is a leader in providing wolf education. Join us for our [Symposium Educator Day](#) to bring relevant, science-based activities and knowledge to your students. Registration for the day includes: breakfast, lunch, daily break refreshments, materials and a copy of the International Wolf Center's *Gray Wolves Gray Matter* curriculum.

***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.



***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 *Chasing Coral* at the Paramount Theater and *Team Teaching with Mother Nature* by the Jeffers Foundation



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

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

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](#). The deadline for session proposals is September 15.

***Teaching Animal Adaptations in the Inquiry-Based Classroom, Sep. 12-Oct. 23, online**

In this facilitated online course from [PBS Teacher Line](#), participants will develop a firm understanding of inquiry-based and connected learning approaches to support young children's understanding of Animal Adaptations, an essential learning standard in the Life Science curriculum of the Next Generation Science Standards for children in early childhood and early elementary grades.

***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 apthomas@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.



Early Career Knowles Teacher Fellowship

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. Valued at more than \$150,000, Knowles Teaching Fellows receive access to a wide range of benefits. Applications for the [2019 Fellowships](#) are due November 25.

Population Connection online Professional Development

[Population Education](#) is excited to announce that registration is open for our fall 2018 online professional development course for science and social studies educators of grades 6-12! The eight-week course runs from October 15 – December 7, 2018. Discover student-centered learning strategies that use contemporary issues and real-world data to examine the social and environmental impacts of human population and engage in meaningful dialogue with teachers across the world. More information is available [here](#).

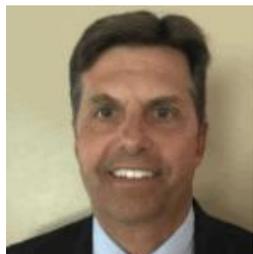
Teacher and School Awards and Opportunities

Presidential Award Science Finalists and Awardee

The Minnesota science finalists for the Presidential Award for Excellence in Mathematics and Science Teaching (PAEMST) for 2018 are:

- Dan Gruhlke, Eastview Education Center, Monticello
- Bonnie Laabs, Hamline Elementary School, St. Paul
- David McGill, Capitol Hill Elementary School, St. Paul

Their applications will be reviewed at the national level and the awardee will be selected through the National Science Foundation. They will be formally recognized at the MnSTA Conference on Science Education in St. Cloud November 9. (see info about these events below)



This summer the White House presented the 2016 PAEMST award for science to James Schrankler, science and engineering specialist at St. Anthony Park Elementary School in St. Paul. The award provides \$10,000 in cash and a trip to Washington DC for the award ceremony and professional activities. Over the past five years, Jim has worked as a research fellow on an eight million dollar National Science Foundation engineering grant. The research is a partnership between the University of Minnesota and Purdue University. The work has evolved into a teacher leadership role, where in addition to the curriculum writing and

implementation, Jim coaches other teachers in utilizing the engineering design process. He also teaches science methods for the University of Minnesota.

MnSTA Science Teaching Award

Be rewarded for great teaching. Members of the Mn Science Teaching Assn. are encouraged to apply for the MnSTA Science Teaching Award. An elementary teacher and a secondary teacher will each receive a \$1,000 grant for use in their classrooms and they will be recognized at the MnSTA conference. The application is relatively easy and is due September 24. The nomination and application information is available at [this link](#).

***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.

***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

***Binocular Giveaway**

[Cornell Lab of Ornithology K-12 BirdSleuth program](#) and Celestron Optics are supporting 15 classrooms who participate in citizen-science projects and could benefit by having 10 high-quality optics. Whether you're watching a bird feeder, going out on regular bird walks, or participating in a bio blitz... share with us how your students are practicing their science skills and what you could accomplish with 10 of these great Celestron Outland X 8x42 binoculars. [The application](#) closes Friday, October 1, 2018. As a giveaway recipient you will be required to share your citizen-science experience using the binoculars through the BirdSleuth Action Map.

*Project Learning Tree (PLT) GreenWorks Grants

If you've been trained in PLT, you are eligible to apply for up to \$1,000 to support environmental education at your school or community. Examples of past projects include tree plantings, stream clean-ups, outdoor classrooms, schoolyard and habitat improvements, interpretive signs and more. The [application](#) deadline is September 30.

*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.



*Faces of Engineering PSA Videos

American Council of Engineering Companies members are featured in Public Service Announcement (PSA) videos developed by the Science Museum of Minnesota to promote the Year of the Engineer. The video PSA series of engineers is posted to Twitter once a month. The following engineers were interviewed for the project. Click on the links below to see the two videos that have already been posted on Twitter. For questions contact Melissa Langowski, melissa@acecmn.org.

- [Katie Toghradjian](#), Isthmus Engineering, Inc. (July 13)
- [Lisa Breu](#), SRF Consulting Group, Inc. (August 13)
- Ann Johnson, Professional Engineering Services, Ltd. (September 13)
- Debra Reider, AKF Group LLC (November 13)

*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](#) or email Jackson Thomas at Jackson@girlswhocode.com.

Move Mining Next Gen! Video Competition

[Move Mining Next Gen](#) is a free video competition that kids grades K-12 can enter from home or as a school project. Students Learn about minerals and their uses, practice persuasive writing, spread the word about mining's impact on daily life, and maybe even win some money!

*Student led Energy Competition

[Renew Our Schools](#), a highly effective, Colorado-based STEM energy conservation competition, is now available to any school in the nation. Participants utilize real-time energy monitors to access their electricity use through an easy-to-use web portal. With the push of a button, students interact with a hands-on learning environment that empowers them to investigate and understand their school's energy usage. This 5-week challenge has saved Colorado districts up to \$10,000 per competition and reached 100,000 students, providing them an opportunity to become leaders in their school and community. To learn more, contact Kath Croasdale, kcroasdale@resourcecentral.org.



*MN Zoo's Show us you 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.

ZOOMS STEM Design Challenge: Engineering for Animals



The ZOOMS STEM Design Challenge offers students in grades 3-8 a chance to use the engineering design process to develop a solution to a 'real' problem faced by zookeepers and staff at the Minnesota Zoo. Teachers receive resources and support from the zoo to ensure a meaningful experience for all. Selected students will be invited to showcase their solutions at the ZOOMS Design Exhibition in March 2019 at the Minnesota Zoo for a chance to win a backstage pass experience with our animals! **FREE** for all teachers and students to participate!

This year's focus is developing enrichment and exhibit design for the Minnesota Zoo's moose. Have your students design an enrichment to encourage natural behaviors of our six Moose: Grant, Mac, Marais, Alce, Matilda, and Aurora. Zoo staff are also looking for ways to improve the Moose Exhibit to solve current exhibit maintenance issues and create the ability to exhibit more than one moose at a time with a more immersive guest experience. More details are at the [Design Challenge website](#).

The video can be any style: animation, live action, Claymation, PowerPoint... or any style they like! Videos will be judged by a panel of experts, with one prize going to the video entry winning the most online votes. The videos are due January 14.

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.



*High School Engineering Program

Each year the American Council of Engineering Companies of Minnesota (ACEC/MN) sponsors a [High School Engineering Program](#) to introduce students to the field of engineering. The program offers first-hand insights into engineering careers and covers many of the different types of engineering required to design a project including civil, structural, mechanical, electrical, and geotechnical. The students meet Monday nights throughout the fall at a local engineering firm's office. Each firm will work with students to illustrate how they contribute to an overall project and engage students in a hands-on activity related to their work. The program begins September 24.

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](#).

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.