

Science Update

September 2019

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.



Science Standards Committee
celebrates their work with cake

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

New Science Standards – Current Status and Implementation



The 2019 Science Standards, which were developed by the committee pictured above, have been approved by the Commissioner of Education. A few quick highlights:

- The standards are available at the bottom of the [MDE Science website](#). This document may be used for planning curriculum and instruction.
- The date for full implementation is likely to be the 2023-24 school year, with the science MCA (statewide test) to start assessing the new standards and benchmarks.
- The standards become law through the Minnesota Rulemaking process which may take one-two years.

Since the 2019 standards and benchmarks reflect several changes in understanding about science learning and made several changes in grade placement of benchmarks, you are encouraged to read the introduction to the standards carefully. Due to the large changes, the committee recommended a five year implementation period. Districts may wish to consider the following implementation timeline:

2019-20 – Professional development focused on Science and Engineering Practices (SEP). Start using SEPs with existing instruction of 2009 standards. Start planning courses.

20-21 – Professional development focused on phenomena, storylines and assessment. Start adding phenomena and other three dimensional strategies to existing instruction of 2009 standards. . Development of unit plans. Review instructional materials.

21-22 – Teach the new standards in grades K, 3, 6, and a ninth grade course

22-23 – Add new standards in grades 1, 4, 7, and another HS course

23-24 – add grades 2, 5, 8 and biology (to line up with the grades that are tested on the MCA)

The formal rulemaking process for the standards has begun. MDE will accept comments on the proposed rule until a Notice of Hearing or a Dual Notice of Adoption is published. For more information about how to submit a comment, [please review the Request for Comments posted on MDE's K-12 academic standards rulemaking website](#). A copy of the proposed rules are available on the department's rulemaking website. For more information about the rulemaking process, contact [Kerstin Forsythe](#), 651-582-8583. The proposed rule involves the standards and not the benchmarks.

***Science District 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 October 21. This year the focus is on preparing to implement the new standards and the professional development that will be needed. There may also be some out-state meetings. If you would like to receive announcements of the meetings, contact john.c.olson@state.mn.us.

Teacher Events and Workshops

***Climate Change and the new Science Standards, Sep. 28, Bloomington; Nov. 7, St. Cloud**



Join Climate Generation to unpack the new middle and high school state science standards including climate change causes, as well as solutions, as they relate to energy and engineering!

- Gain experience with phenomena-based learning
- Integrate climate change and American Indian contributions into science instruction
- Identify learning progressions
- Engage in hands-on activities to support the new science standards

This day-long workshop is free and is supported by Xcel Energy. [More Information](#)

***School Indoor Air Quality Training, September and October, various locations**

Public schools must have health and safety programs that comply with health, safety, and environmental regulations and best practices, including indoor air quality (IAQ) management. One best practice is that public schools have an IAQ Coordinator. This training will discuss the state's best practices for school IAQ management. Continuing education credits are available for several licenses. [Information and registration](#)

***Midwest Environmental Education Conference, Oct. 3-5, St. Paul**

This year's conference will be held at the Science Museum of Minnesota in St. Paul. The theme *Access Nature: Promoting Inclusion and Diversity in Environmental Education* will explore barriers that prevent educators and learners from accessing natural areas and having valuable learning experiences in the outdoors. [Information and Registration](#)

***Nature and the New Science Standards, Oct. 18, St. Paul**

Spend "MEA Friday" at the Science Museum of Minnesota and get fun, hands-on lessons that use trees and forests to teach math, science, social studies, language and writing. If you're tired of hearing "Why do we have to learn this?" come to this training. Your students will love how Project Learning Tree lessons use real-world objects such as schoolyard trees and habitats, leaves, and local cultural stories. [Information](#)

- Learn outside! Parts of the workshop will be outdoors, so dress for the weather.
- Short tour of the museum archives--a rare opportunity!
- Day pass to museum exhibits -- explore after the workshop.
- [PLT K-8 Environmental Education Activity Guide](#)

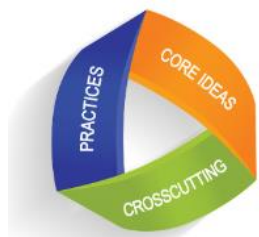
PLT K-8: Let Nature be your Teacher, Nov. 2, Plymouth

Your K-8 students will love these fun, practical, hands-on lessons that use your local trees, forests, and the natural world to teach skills in science, math, language arts, and social studies. Lessons can be done in your classroom, schoolyard, or school forest in all seasons. Dress for the weather and bring your laptop.



Instructors are DNR-trained environmental educators: Jen Kullgren is a Hennepin County forester and tree expert, and Alexa Swan is a Learning Experiences Specialist for St. Paul Parks and Recreation. [Information](#)

***MnSTA Conference on Science Education, Nov 7-9, St. Cloud**



Raising the Standard of Science Education in Minnesota is the theme of the Minnesota Science Teachers Association annual conference. Learn how to incorporate the new science standards in your classroom. Check out a variety of presentations from across the nation. Visit the vendors to view new curriculum materials and equipment. This year the venue is the Rivers Edge Conference Center in St. Cloud. Here are some of the highlights:

Thursday – Free activities

- All day workshop: *Climate Change and the new Science Standards* led by Climate Generation. [Registration](#)
- Evening Workshop: *Team Teaching with Mother Nature* led by Jeffers Foundation
- Movie Screening

Friday – 60 Sessions

- Keynote Address: Peter McLaren, co-writer of the Next Generation Science Standards
- Strand speakers and breakout sessions for biology, chemistry, earth science, elementary and physics
- Sessions on the new standards and teaching strategies



- Social event

Saturday

- Workshop on teaching strategies for the new science standards.
- Elementary and secondary hands-on workshops
- Relicensure sessions "Relicensure in a day"



Conference information and registration is at the [MnSTA website](#). Presentation proposals are due September 15. Share your good instructional ideas!

***STEM Education Conference: December 3, St. Paul**

Transcending Boundaries: Connecting School, Career and community through STEM is the theme of the annual STEM education conference sponsored by [SciMathMN](#) and this year co-sponsored by [The Works Museum](#). Join colleagues from Minnesota's STEM learning ecosystem to consider the role of STEM education in providing inclusive environments, adequate resources, and career-connected learning that prepare the next generation for the future. Conference attendees and presenters will include: preK-12, university, informal, community, and afterschool educators and leaders; industry partners, professional organizations, employers and funders; and policy makers and community members.

Registration is now open - click [here](#) for more information and to register.

***Earth Science Teaching Conference, Feb 7, Plymouth**



The Minnesota Earth Science Teachers Association proudly announces that registration for the upcoming conference is now open. Mark your calendars for Friday, February 7, 2020. Meteorologist Sven Sundgaard will be our keynote speaker. Breakout sessions include a mix of topics and are hosted by current 6-12 teachers as well as college faculty. Breakfast, lunch, door prizes, and classroom resources are included with your registration.

Take this opportunity to connect and reconnect with your colleagues from across the state and enjoy spending the day learning with other Earth science enthusiasts. View complete session descriptions and download your registration form at <http://mnearthscience.weebly.com/>

Teacher and School Awards and Opportunities

***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 with a plaque at the MnSTA conference. Here are some projects that have received funding:

- Gardening
- Data collection devices
- Tradebooks
- Investigation materials
- Recycling stations
- Ecology materials
- Balloon launch materials
- Wind energy investigations

The application is relatively easy and is due September 23. The nomination and application information is available at [this link](#).

* Presidential Award Science Finalists

The Minnesota science finalists for the Presidential Award for Excellence in Mathematics and Science Teaching (PAEMST) for 2019 are:

- Eric Friberg, biology teacher, Henry Sibley High School, Mendota High School
- Marta Stoeckel-Rogers, physics teacher, Tartan High School, Oakdale
- Cynthia Welch, life and earth science teacher, Cloquet Middle School, Cloquet

They were announced at STEM Day at the State Fair and they will be formally recognized at the MnSTA Conference on Science Education in St. Cloud November 8. Their applications will be reviewed at the national level by the National Science Foundation and the awardee will be selected by the White House. Nominations for the 2020 award for K-6 teachers will open in October.

*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,



*Green Ribbon School Award

Forest Lake Area High School is a 2019 recipient of the US Department of Education Green Ribbon Schools Award. They join 34 other schools from across the nation in achieving this prestigious. They will receive their award in Washington, DC on September 25. John Olson will be recognized with the State Director's award.

A few highlights of Forest Lake's accomplishments are:

- Energy reductions through the installation of solar panels which saves the district about \$70,000 per year.
- Student well-being support provided by junior and senior students serving as mentors for ninth and tenth graders.
- Volunteer hours surpassed 3000 hours in fall 2018.
- Comprehensive environmental outdoor education in multiple content areas, including biology, agriculture, earth science, physical education and conservation electives.
- A strong environmental club which researched and wrote much of the application for the award.



Highlights of their programs are available [here](#). Information about the award program and how to apply is available [here](#).

School Programs and Resources

*ZOOMS Design Challenges from the Minnesota Zoo

Looking for ways to engage your students in integrated STEM? Register your class to develop a solution to a real problem at the zoo! This year, students will be challenged to develop solutions to update the Tropics Trail nocturnal hallway exhibit space and enrich the four visually impaired Hawaiian Monk Seals found in Discovery Bay. There are three levels of participation: Level 1: 3-5 grade, Level 2: 6-8 grade and Level 3: 9-12 grade

A FREE design challenge teacher workshop will be offered on Tuesday September 24th from 9 am- 3 pm to offer resources, activity ideas, and background knowledge of each challenge to help support implementation in your classroom. If you are unable to attend, communication will be continued through an online basecamp community of design challenge participants throughout the year. The first 10 Elementary, 10 Middle School, and 10 High School teachers to register receive a \$200 stipend upon meeting design challenge implementation guidelines. [More Information.](#)

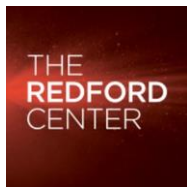
***Show Us Your Mussels Challenge from the Minnesota Zoo**

New! For the 2019-2020 school year the Challenge will now include BOTH middle and high school levels. Minnesota students create original digital media campaigns informing the public about the impact of water quality on native mussels. The school groups that get the message out to the most people will receive FREE field trips to the Minnesota Zoo including bussing, admission, parking and interactive sessions with our Mussel Conservation staff. Show Us Your Mussels Teacher Training Saturday, September 21, 2019, 10 a.m.-2 p.m. OR Friday, September 27, 2019, 10 a.m.-2 p.m. [Information and registration](#)

***Hands-on Science from TPT**

Watch local science educators, such as the U of M Physics Force, demonstrate science concepts with the help of a young studio audience. The 30 minute episodes are hosted by David Gillett and produced by Twin Cities PBS. They are frequently broadcast on public television stations across the state and the archived videos may be played from the TPT website. [More information and broadcast times.](#)

***Happening: A Clean Energy Revolution, video available free to teachers**



Watch as Robert Redford's son James Redford explores the factors driving the transition to clean energy in his feature documentary HAPPENING. To further engage students, the Redford Center created TEACHING HAPPENING, an interdisciplinary, modular curriculum developed to work alongside HAPPENING. [Click here to watch a short trailer.](#)

Free to teachers, the classroom version of the film runs 50 minutes and the curriculum is aligned with national standards for grades 6-12 in Science and English. To access your **free** HAPPENING streaming link and educational curriculum, [click here](#)

Student Programs, Awards and Competitions

***Youth Climate Kickoff, October 12, Minneapolis**

Students are invited to share ideas and learn tools for engaging schools in climate action, share projects happening in your community already, and connect with other groups that develop climate justice solutions. This FREE event is 10 am – 3 pm at Roosevelt High School in Minneapolis. Youth Climate Kickoff is hosted by Youth Environmental Activists of MN (YEA! MN), a program of Climate Generation.

[Information and Registration.](#)



***Sigma XI Research Conference, November 14-17, Madison**

Sigma Xi, the Scientific Research Honor Society will be hosting its annual [Student Research Conference](#) on November 14-17, 2019 at the Monona Terrace Convention Center in Madison, Wisconsin. High school students across research disciplines are invited to:

- Present a research poster and compete for top presentation awards (deadline for abstracts is October 4)
- Hear from distinguished scientists and engineers
- Attend the Sigma Xi [STEM Art and Film Festival](#)
- Save 10 percent by registering by September 15.
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Science and Engineering Competitions

- [Minnesota Science Olympiad](#)
- [Science and Engineering Fair and Science Bowl](#)
- [FIRST Lego League](#), [FIRST Tech Challenge](#), [FIRST Robotics](#)
- [Supermileage Challenge](#)
- [Real World Design Challenge](#)
- [Toshiba/NSTA ExploraVision](#)
- [NSTA Angela Award](#) – girls grades 5 – 8
- [MN Scholars of Distinction](#) – high school
- [National Youth Science Camp](#) – two Minnesota Delegates



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.

[Youth Eco Solutions](#) (YES!) – Statewide, youth-led program for hands-on eco related projects