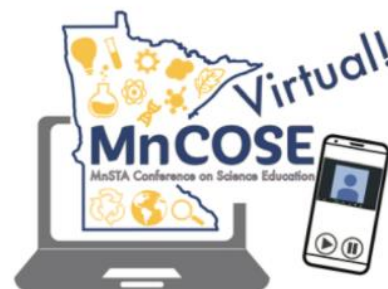


Science Update

January 2021

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. Frequent updates and new events are posted on the MnSTA Facebook page and Twitter feed @mnsta1.



MnSTA Conference
on Science Education-
still continuing!

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 or has been substantially updated.

News

*Progressing toward the new Science Standards

The pandemic-induced changing learning models have often shifted attention away from the plans for transitioning to the new science standards. The MDE science webpage has been updated with resources for science instruction during this year with an eye towards implementing new standards. Some topics to pay attention to:

- Distance learning and return-to-school resources
- Science Standards Rulemaking
- Standards Transition timeline and alternatives
- Teacher licensing
- Planning for MCA IV and Test Specifications

The Minnesota Science Teacher Association (MnSTA) newsletter has included a series of articles by John Olson, MDE Science Specialist, on the preparations for the new standards. They are archived at the [MnSTA Science Standards webpage](#). The recent articles include:



- [How do we prepare to implement the new Science Standards? \(May 2019\)](#)
- [How do I improve my distance learning lessons to deepen the learning of my students? \(March 2020\)](#)
- [How can I reflect on my teaching and build for next year? \(June 2020\)](#)
- [How do we keep working toward the new science standards during this demanding year? \(Sept 2020\)](#)
- [As we transition into three-dimensional instruction, what are some lesson-planning models to use? \(Jan 2021\)](#)

Some Other MnSTA resources

The [MnSTA Virtual Conference on Science Education](#) (MnCOSE) has several recorded sessions on implementing the new science standards, including the following presented by MDE staff:

- Introduction to Three-dimensional Teaching and Learning
- Mn Science Standards Implementation
- Science MCA-IV in 2024
- Assessment for Learning in Response to COVID-19

See the MnCOSE listing under Teacher Events for access information.

[Resources for Teaching Remotely – Supporting students through COVID-19](#)

6th Grade Earth Science Workshop interest survey

The Minnesota Science Teachers Association is planning a week-long summer workshop for teachers who will likely teach 6th grade science when the new science standards are implemented. Since the 6th grade standards and benchmarks will be focused on Earth and Space Science content and three-dimension instruction, those will be the components of the workshop. The first year of this workshop has received some funding for planning, but it is likely that most of the cost will require a fee paid by the supporting school or the participant. [This survey](#) is designed to get input for planning the content and marketing for the workshop. Thank you for completing the survey. Watch for announcements of the workshop in January or February.

Teacher Events and Workshops

*MnSTA Virtual Conference on Science Education (MnCOSE), still available

Now that the conference is “over,” you can still register and use the recorded sessions. All sessions are recorded and available to registrants through May. The exhibitors section is a great place to compare curriculum materials, resources, organizations and graduate programs.



Recorded highlights include:

- *Engaging Diverse Voices in STEM*, Maynard Okereke, “Hip Hop M.D”
- *Mental Health and Self Care for Educators*, Dr. Jules Nolan, Phoenix School Consulting
- *Engaging Students in Three-Dimensional Science Investigations*, Brett Moulding, Framework and NGSS writer

Theme: ***A New Vision for Science Education in Minnesota; All Students, All Standards, All Voices!*** Conference strands are:

- Distance Learning
- 3-Dimensional Learning
- Equity, Diversity and Inclusion in Science Education
- Elementary Science Education
- Life Science Education
- Chemistry Education
- Physics Education
- Earth Science Education

All strands include a focus on the new science standards.

The member rate is \$50, \$75 for nonmembers which includes membership. Check out details and the schedule at the [MnSTA Conference website](#). Gain great ideas for teaching from your fellow science teachers from the comfort of your home or classroom.



***Teach Outdoors! Minnesota virtual workshops, Wednesdays Jan - May, 3:30 – 4:30**

Join experienced environmental educators in Minnesota to learn how you can integrate opportunities to teach outdoors into your curriculum. All activities and lesson shared are connected to Minnesota Academic Standards. CEUs will be included. Sessions will be recorded and available. [Information and Registration](#).

- Jan. 6 Animals in Winter
- Jan. 13 Math Outdoors
- Jan. 20 Phenology
- Jan 27 Light and Shadows

***Introduction to Modeling Methods – distance learning course– Sundays Jan. 10 – May 2**

In this Distance Learning course, we will delve into the Modeling Cycle, its basis in cognitive science, and the practical ways that teachers use Modeling Instruction in the science classroom. This course will sample Life Sciences and Physical Sciences in order to explore the Modeling pedagogy through multiple content lenses. By utilizing both student mode and teacher mode, participants will use readings, virtual whiteboarding, discussions, and reflections to engage in modeling practices that will lead to improved student learning. [More Information](#).

***Virtual Mississippi River Delta Institute, Weekly Jan 12 – Feb 3. 6-8 PM**

This free professional development program from Hamline University combines online and hands-on activities that will inspire, educate and prepare 3rd-8th grade teachers to engage students in STEM disciplines through experiential, inquiry-based investigations. It will incorporate expert presentations about Delta environments, rich media resources ready for use with students, community-building with other educators, and independent offline explorations. All educators are welcome to apply, including past institute participants. [Learn more and apply](#).

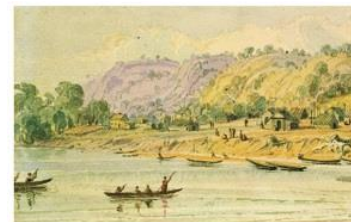


Also look for [Waters to the Sea recorded webinars](#)

- Dakota Place and Kinship with the Mississippi River
- Teaching Sense of Place Online with Cara Rieckenberg

And [upcoming webinar](#)

- Discovering the Geology of the Mississippi River Delta, Jan 21, 6 – 7 PM



Middle grades STEM teacher training. Jan. 28, Feb. 25, Mar 25, online

The Minnesota State Engineering Center of Excellence is sponsoring a [virtual training for the Middle Grades](#) STEM project-based curriculum by the Southern Regional Education Board (SREB), the nation's largest school improvement network, virtual teacher training.

Training Highlights (8 AM – 4 PM)

- Covers full curriculum for three student-centered projects.
- Projects can be taught in virtual, hybrid, or in-person classroom settings.
- Aligned to the National Science Standards, mathematical practices, and common core literacy standards.
- Appropriate for 5th-9th grade.

***Use of Real-time Websites to Teach Weather, Feb. 13, noon – 2 PM, online**

Weather is a complex phenomenon involving a number of variables that are constantly changing as well as interacting with each other over the course of a “typical day” and longer time scales. But there is nothing more thrilling than to be able to correlate such phenomena with real-time data and/or maps—including satellite imagery-- that can be found on the Internet. [Circle of Illumination Science Education](#) invites **6th grade teachers** in Minnesota to participate in a webinar that will help them learn how to harness the power of such web sites, deepen their content mastery of earth and atmospheric science as well as provide them with many ideas for hands-on activities. 2 CEUs will be given. To register, email [Dr. Amy Lilienfeld](#)

This will be the first in a series of free workshops to be offered throughout the spring of 2021 by Circle of Illumination Science Education in which participants will learn how to use data from a variety of government web sites to enhance the teaching of the revised academic science standards. [More information](#)

Talk Climate Institute, March 23-24, Online



Join Climate Generation for a virtual two-day workshop to learn new ways to talk about climate change that inspires confidence, ignites conversation, and mobilizes action. Talk Climate focuses on personal stories—you will develop your own climate story and share with your fellow Talk Climate attendees. Throughout the program, writing, reflective listening, and art activities support your story development and confidence in talking about climate change. Scholarships are available. [Information and registration.](#)

***Opportunity to strengthen your Earth Science credentials, May 19 – July 1, online**

Earth Science Essentials, an advanced online review of Earth Science for high school and middle school science teachers, will be offered May 19 – July 1, 2021 through Minnesota State University Moorhead. The course materials are available free for self-study. Participation in the course via tuition provides college undergraduate or graduate credit. [Learn more](#)

Computer Science in Minnesota

Code.org just released their [annual report](#) which says that [Minnesota](#) is the worst state in the nation for access to Computer Science. The Minnesota Computer Science Teachers' Association is calling for science teachers to advocate for Computer Science classes and join [MN CSTA](#) for a free membership.

Knowles Teacher Initiative for new science teachers

Each year, approximately 35 Fellowships are awarded to early-career high school biology, chemistry, physics and mathematics teachers. Knowles Teaching Fellows receive mentoring and coaching from a staff of experienced teachers and teacher educators, financial support, and membership in a nationwide community of more than 450 mathematics and science educators. Deadline January 18. [More information, referral and application.](#)

Teacher and School Awards and Opportunities

*MnSTA Science Teaching Awards

The Minnesota Science Teacher Association Science Teaching Award is based on an application and provides a \$1000 fund for classroom project supplies.

Elementary Award: Tanner Walters of Oak Ridge Elementary School.

Tanner is a K-5 STEM team teacher. In an effort to help ensure that students at his school have the tools to learn science, Tanner developed and manages a STEM to GO library system where students can check out science-focused tools and activities to use from home.



Secondary Award: Gwen Isaacson of Maple River High School

Gwen teaches Chemistry, physics, STEM 9, Speech, HS Forensics, and Science 9A. Gwen never expects perfection from her students, but she always expects that her students are striving for their best and give their best effort at whatever the task may be. She likes to see her students being challenged and rewarded for overcoming something that was challenging to them.



For information about the award check the [MnSTA Awards page](#).

*Presidential Awards Finalists

The 2020 Presidential Awards for Mathematics and Science Teaching go to elementary teachers who record a lesson and write about several aspects of their teaching and leadership. The state finalist are selected by a Minnesota committee and then their applications move on the national review. The Minnesota finalists are

- Anna Edlund of Bluff Creek Elementary in Eastern Carver County Schools
- Byron Gilliland of Goodview Elementary in Winona Public Schools
- Brian Hare of E-STEM Middle School in St. Paul Public Schools



Watch for pictures and descriptions next month.

Nominate yourself or a colleague for the 2021 award. Teachers of grade 7-12 science, engineering, mathematics, and computer science are eligible. This is a great opportunity to reflect on your teaching and increase your leadership in science education. The application is not due until May and there are opportunities for support from past awardees. Look for more information at the [PAEMST website](#).

Other Awards

Check out information about the following awards programs and consider applying.

- [National Board Certification for Teachers](#)
- [National Science Teachers Assn. Awards](#)
- [National Association of Biology Teachers Awards](#)

School Programs and Resources

*Experiential Learning lessons and kits

Are you a science teacher looking to better engage your middle school students with hands-on learning? Is your school a low performing school? We are offering a partnership opportunity to one middle school in the state, which thinks that its students will benefit from curriculum-aligned experiential learning. We will offer the following: ten experiential learning lessons/kits during the academic year, fully aligned to the scope and sequence of science learning, and a rubric to measure the development of 21st century skills in students through our lessons. We will provide PD, including strategies to contextualize our lessons to the classrooms prior to implementation. A partial implementation during the current academic year may be considered. All resources and PD will be offered at no cost to the selected partner school. Please contact Pathikrit (pathikrit@science60.com) for more information about this opportunity.”

*Engineering Machine Design Contest



The Engineering Machine Design Contest is an opportunity for teams of 3-10 students in 5th – 12th grade to design and build a complex machine using everyday objects with the guidance of a coach. The completed machine will use multiple steps to complete a simple task. The contest theme for 2021 is **Driving Change through Transportation!** We look forward to seeing how this year's theme is interpreted by teams and conveyed in their machines. Regional competitions will take place from late February to early April with the Championship event in late April or May. [Learn more.](#)

*WolfLink video conferencing

Through two-way videoconferencing on Zoom, the International Wolf Center educators and ambassador wolves will keep your students on the edge of their seats while learning about these mysterious predators in a LIVE program from northern Minnesota! Some programs are free to Minnesota schools while outside funding lasts. [More Information.](#)

*Get the Lead Out program

Get the Lead Out! is a program of the Minnesota Pollution Control Agency. Our goal is to spread awareness about the effects of lead-based fishing tackle on the common loon and other Minnesota wildlife and to promote the use of lead-free fishing tackle. We will be offering free virtual outreach presentations to classes of all grade levels beginning in January 2021. Contact us at leadout@state.mn.us if you have questions. [GTLO Fact Sheet](#)



Smithsonian COVID-19 curriculum resource

Science educators will play an important role in educating students about COVID-19 and the underlying science and social science of the pandemic. At the Smithsonian, we believe that students are more likely to engage in protective behaviors if they understand the science of WHY they are being asked to engage in these behaviors (e.g., wearing face masks, physical distancing, contact tracing, sorting through claims and evidence, etc.) To that end, the Smithsonian Science Education Center and its collaborators developed a free hands-on guide for youth and their families, available in 25 languages to support English Learners: <https://ssec.si.edu/covid-19>.

Green Careers for a Changing Climate



The [Green Careers for a Changing Climate](#) Instructional Supplement from Climate Generation contains resources to help young people grades 6 - 8 learn about Green STEM Careers — careers that can help solve climate change impacts using STEM skills. Includes connections to Project Drawdown solutions and can be used in any subject area! The Green Careers for a Changing Climate Instructional Supplement contains resources to help young people learn about Green STEM Careers — careers that can help solve climate change impacts using STEM skills. Includes connections to Project Drawdown solutions and can be used in any subject area!

Boundary Waters resources

NO BOUNDARIES TO THE BOUNDARY WATERS is an educational program of Friends of the Boundary Waters Wilderness designed to bring the ecology and wonder of the Boundary Waters into classrooms across Minnesota. Our program inspires student observation and develops critical thinking about the natural world.

We provide FREE resources that start at the computer but end outdoors to meet the wide and shifting range of needs in Minnesota schools at this time. The flexible curriculum is created for students in grades 6–12 and designed to adapt to grade levels, schools, focus areas, and teacher preference. The program meets state standards in science, Language Arts, Social Studies, and Math. The program is looking for a small group of schools to pilot the No Boundaries program. [More information at this Get-STEM site.](#)

Twig Science Reporter

Twig Science Reporter, is a FREE topical science service that connects students and teachers to real global and local phenomena and STEM news through engaging, high-quality videos and learning resources. All you need to do is sign up at [Twig Education](#). There is a new episode each week. We want every student to have access to the information and tools they need to become engaged and productive citizens. In the 21st century, that requires continually developing STEM skills and science literacy.

10 Plants that changed Minnesota – Free book

This book and the Teacher Handbook by Mary Meyer of the Landscape Arboretum is available free to all life science teachers in Minnesota. Send your name, mailing address along with the grade and classes your teacher to Mary Meyer, meyer023@umn.edu. Also watch the recording of her presentation at the MnCOSE conference.

Student Programs, Awards and Competitions

*National Youth Science Camp June 28 - July 21, Virtual

Two high school seniors (class of 2021) from Minnesota will join delegates from all states and selected countries will attend this all-expenses-paid program. Normally delegates gather in the mountains of West Virginia to engaging science activities and outdoor adventures. This year the virtual experience will include world-class lectures, directed studies and seminars with prestigious and up and coming STEM professionals who are making a difference in their fields of study and changing the world for good. Participants must commit of a minimum 4.5 hour daily participation between 5 PM and 9:30 PM Central time. For [program information](#) visit the NYSC website. The [application](#) is Due Feb. 28.

Regional and State Science and Engineering Fairs

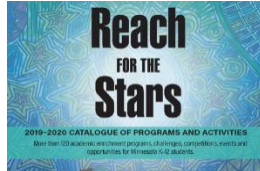
Minnesota has seven regional science fairs in February and a state fair at the end of March. *Even if your school does not hold a science fair, students from your school who complete science projects can attend their regional fair*, giving them the chance to join the 500 middle & high school students advancing to the state-level competition.

The state science and engineering fair will be held virtually this year March 26-30 and include exciting opportunities for networking and enrichment -- as well as the chance to advance to international competition and win prizes and awards from 35 different companies and organizations. We know that completing a research project this year may be especially challenging. So we are pulling together special resources and supports for teachers and students. [Learn more](#),

Science and Engineering Competitions

Check out the follow program for your classes and individual students.

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



Minnesota Programs and Competitions

Many competitions, out-of-school programs and field trip opportunities are 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

[Sarah Carter](#), STEM and Computer Science 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](#) a.k.a. STEM Teacher Center

[Get – STEM](#) Connections between schools and businesses

[EE Portal @MAEE](#) 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