

Science Update

September 2020

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.



Preparing for new standards and MCA

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 changed.

News

*Preparations this year for the new Science Standards

The MDE Science webpage has been updated with many of the documents that districts and schools need for planning, including

- Standards documents in text and spreadsheet versions
- Standards implementation timeline recommendations and alternatives
- Licensure in support of the new science standards
- Resources for instruction and learning

It would be good to start using the pedagogy associated with the new standards as we continue to teach using the current (2009) standards. One approach is to start tweaking lessons to strengthen the use and teaching of some of the Science and Engineering Practices. A goal should be to have students actively involved in making sense of phenomena, and through that work develop skills and learn concepts. See this article from the [upcoming MnSTA newsletter article](#) for more suggestions and resources.

*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 district curriculum coordinators, science coaches, TOSAs, and charter school/private school lead teachers. Online meetings are held throughout the year.

The next meeting is October 8, 9 – 11 am, focusing on activities this year in preparation for the new science standards. Brett Molding and Peter McLaren, Framework and NGSS writers, will present their structure for instructional planning called GRC (Gather, Reason, and Communicate). They will lead a workshop for district leaders Nov. 19-20. If you are not on the district leader list, and would like to receive announcements of the meetings and the workshop, contact john.c.olson@state.mn.us.

*Preparing for Science MCA-IV

The Science MCA-IV, based on the 2019 Minnesota Academic Standards, will first be administered in 2023–24. In order to prepare for this administration, field testing of new test formats and item types will begin in spring 2021. New features will include: 1) the presentation of information on multiple tabs on the same page, and 2) the inclusion of constructed-response items where students are required to write a response. Resources will be provided this winter to familiarize students with these new formats and item type. Note: Field test items do not count towards a student’s score.

Additionally, the Science MCA-IV test specifications are now available on the [MDE website](#). Test specifications describe how the revised 2019 Minnesota Academic Standards will be assessed on the Science MCA-IV.

Guidance for science In-person and at-home instruction



The Minnesota Department of Education had developed several guidance documents for the [Student Instruction COVID-19 Resources](#) webpage including [Science Standards Support for Distance Learning](#).

The Council of State Science Supervisors (CS3 “CS-cubed”) to support science learning during distance and return to school, including advice for science leaders, teachers, families and students. Most recently, they have published [back-to-school guidance briefs](#) on instruction, assessment, curriculum, well-being and safety. They also produced a very helpful and practical [recorded lab safety webinar](#) by NSTA science safety consultant Ken Roy. These are available at this [STEM Teaching Tools website](#).

Teacher Events and Workshops

Minnesota State Centers of Excellence Teacher Training – Sep 16. – Dec. 2 - Online

This is an interactive twice per month webinar series for STEM educators grades 5 - 12. Webinars will feature ready-to-implement activities and resources with guidance for implementing in virtual and distance learning settings. This series is designed to help educators inspire interest in students and set them on the right track to pursue career pathways that lead to high-demand (and high-pay in many cases) jobs in Minnesota. [More Information.](#)

*Overview of the New Science Standards, Sep. 24, Online

This webinar 3:30 – 5:30 pm for Sourcewell will explore the three-dimensional structure of the new science standards as well as the progression of each dimension K-12. Participants will explore the instructional shifts from students learning about science content to students engaging in the practices of science. The training will conclude with a look at some of the resources available to support Minnesota teachers.

If interested in registering for this virtual training, click [HERE](#). Please forward this information to any administrators and teachers that would like increased understanding of the new science standards! If you have any questions, please reach out.

***Insect Institute, Sep 26 and Oct 10, Savage**

Use insects to engage students in science content using 3-dimensional teaching as suggested by state and national standards throughout the year to develop students' ability to observe, investigate, and make claims from evidence, while learning outdoors! Discover and rediscover how insects can work to drive science lesson and extend opportunities to connect science learning with skills in reading, writing, math, geography, art and more. This free socially distanced workshop is 8 am – 4 pm at McColl Pond Environmental Learning Center. For information and registration, contact Suzanne@JeffersFoundation.org



***MN GIS Educator Day, Oct. 9, Online**

Please join us for Educator Day VI on October 9, 2020 from 8:30-4:00pm! All sessions will be online via Zoom and interactive. Registration and a [schedule](#) are posted at the [Educator Day website](#)

We have a fabulous line-up of teachers and workshops, including a midday panel of teacher testimonials. As in past years, this event will also include one-on-one support and Q&A for an all-levels experience.

Teachers will receive a certificate for up to seven hours of CEU credit for attending. If you require assistance for substitute reimbursement, please let us know in the registration form. We don't want funding to be a barrier for YOU to attend. We can pay up to \$125 as a substitute reimbursement (Minnesota teachers only, and funds are limited so register early).

***MN Association for Environmental Education conference, Oct. 10 Online**

Join Minnesota Association for Environmental Education (MAEE) for our annual conference virtually this year! MAEE is excited to connect participants with local citizen and community science projects including Monarch Conservation, Carp Tracking, Pesky Plant Tracker, Citizen Water Monitoring, iNaturalist, and Worm Rangers. Keynote presenter Carrol Henderson will take us on a dive into the history of local citizen science, as well as give us some perspective from his personal experience as a renowned hero for Minnesota wildlife. We will break out into sessions to learn more about the projects from the experts who facilitate the work and have a chance to discuss and ask questions. [Information and Registration](#)

***MnSTA Virtual Conference on Science Education, November 12 -17, Online**

Lower Cost, More convenient, No need for subs, Same great sessions!

We welcome you to share, learn, and grow together with us in our first entirely virtual MnCOSE! Sessions will be evenings Thursday, Friday, Monday and Tuesday plus unconference sessions on Saturday morning.



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

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

All strands will include a focus on the new science standards.

The member rate is \$50 and presenters register for \$25. Check out details at the [MnSTA Conference website](#). Share your great ideas for teaching



with your fellow science teachers from the comfort of your home or classroom. Submit a proposal at the conference website with your initial ideas by September 25.

*Mn Earth Science Teacher Assn. News

MESTA is canceling their Earth Science Teaching Conference, typically held in February, so you might want to check out the earth and space science strand at the MnSTA Conference on Science Education. The MESTA email listserv is now revived. Share questions, resources, and events with fellow earth science teachers. Check out the [new MESTA website](#) for details and to join the listserv.

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.

The information and applications are posted on the [MDE Green Ribbon Schools webpage](#) and are now available from john.c.olson@state.mn.us. The application is due in January.



*Presidential Awards



Eric Friberg, science teacher at Henry Sibley High School, is the Minnesota science recipient of the 2019 Presidential Award for Mathematics and Science Teaching (PAEMST). He has taught biology, AP Biology and English Learners Biology since 2011.

Eric works to put students in a position to have a relevant, rigorous, and active science education. With his team, he redesigned the biology instruction to be tightly aligned to standards, relevant to students, structured for efficient learning, integrated with technology, and built on phenomena that connect to students' lives. These changes have led to both high levels of achievement and narrowed gaps. Seeing a need in his classroom, Eric led the creation of an EL sheltered science program that has increased engagement and access to science and English for immigrant students. Read Eric's profile at the [PAEMST Awardees page](#).

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](#).

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. Here are some projects that have received funding:

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

The application is relatively easy and is due **October 7**. The nomination and application information is available at [this link](#).



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

*Metro Children's Water Festival, Sep. 28 – Oct. 1, Online

This event is FREE and provides lessons, activities, resources, and videos that teach about all aspects of **water**. Recorded versions of lessons and other resources will remain available after October 1st. Water festival materials are geared to meet 4th grade standards. However, the materials are appropriate for many age groups and grades. All interested teachers, students, and their caregivers are encouraged to participate. Pre-registration is required for the live virtual classroom activities.

This year's Water Festival will offer live and pre-recorded 30-minute online classes. Live classes will include time for questions. All classes will be recorded and posted on the festival's YouTube page for future viewing.

Festival activities meet one or more of three core education components: Water's Chemical & Physical Properties; Hydrology; and Impacts. There is also a Careers in Water presentation that features different speakers with careers in water and natural resources. Additional resources are provided for teachers to continue and expand the learning experience after the festival. [More information and registration.](#)

*Outdoor Learning Toolkit

MN Early Childhood Outdoors has prepared for PreK - 5th grade to support schools in transitioning from a primarily indoor model to a primarily outdoor teaching model during the COVID-19 health emergency. To access the toolkit, fill out [this survey](#).

***How to Teach Outdoors**

The Minnesota DNR offers some practical strategies for outdoor classroom management. If being outdoors allows you some “mask-off” time, and you are new to teaching students outdoors, check out [this page!](#)



***Southeast Minnesota / karst geology videos, infographics, and lesson plans – NEW**



The flow of groundwater in southeast Minnesota is fascinating and complex because the unique geology is like no other area of the state. In a new educational video series, the movement of groundwater is explored and brought to life using a unique approach that combines realistic graphics, animation, and aerial footage of the region’s geology. By understanding how groundwater moves through the soil and various layers of rock, viewers can better understand how water-soluble contaminants like nitrate-nitrogen can enter drinking water wells and streams.

The five videos and three graphics can be found at [this site](#).

There are also four new lesson plans that teachers can use to provide an overview of karst geology starting with Minnesota’s basic geological history and processes and ending with student projects that explore best practices for protecting groundwater in karst regions. Lesson plans can be found [at this site](#)

***UM Chemical Safety Day Program**

The program assist educational institutions and nonprofit organizations throughout the state of Minnesota, in disposing of unwanted chemicals and hazardous waste from science, art, industrial technology, and maintenance departments. University of Minnesota Environmental Health and Safety staff travel throughout the state, multiple times a year directly to your location, allowing for convenient waste pickup. Information on the program is at the [Chemical Safety Day website](#).

Water Guardians

The Water Guardians program is a free, web-based curriculum designed for grades 5-8. It contains a set of 5 lesson plans and culminates with a student-led service-learning project. Whether teachers are starting the school year back in the classroom, with online distance learning, or somewhere in between, Water Guardians is designed to fit a variety of settings and needs. Learn more by checking out the [Water Guardians website](#),

Solar Energy Opportunity

A dramatic drop in the cost of solar panels, combined with new financing choices, has now made solar energy widely available. Additionally, schools are incorporating the solar array into their curriculum. Learn about the financial opportunities (including third party ownership), the educational benefits, the environmental impact, and the community leadership roles. [Clean Energy Resource Teams](#) is a not-for-profit organization that provides tools and services for implementing solar energy for schools.

Student Programs, Awards and Competitions

*Youth Environmental Activists (YEA! MN)

Join this network of high school students taking action for a just transition to a resilient climate future for all. YEA! MN provides mentorship to individual student leaders, as well as education and support for an entire school club. We can help you choose a project, launch a school club, navigate power dynamics at your school, plan an effective campaign, engage your audience, and transform your community. Information is at this [Climate Generation site](#).

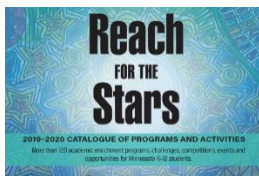
*Youth Eco Solutions (YES!)

YES! is a unique youth program that develops youth leaders while inspiring widespread adoption of renewable energy technologies, waste, and energy conservation best practices, local foods, habitat restorations, and water quality and conservation improvement projects. In addition, students are gaining leadership and workforce skills such as problem solving, communication, teamwork, innovation, and project management. Participating YES! teams from grades 7-12 are guided by adult coaches. Throughout the year, YES! Coordinators work intensively with teams to evaluate community needs, create action plans, and identify and involve community partners. For information go to the [YES! Website](#).

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