

Science Update

March 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.



Women's History
Month
(NSTA's Graphic of
Barbara McClintock)

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

*Women of Science and Engineering

For Women's History Month, the National Science Teaching Assn. is spotlighting 10 extraordinary American women – past and present STEM pioneers – whose remarkable contributions and discoveries in STEM fields have made significant impact in our world. See NSTA's [Women's History website](#). Several women are featured in the [NOVA: Secret Life of Scientists and Engineers](#) collection, including Astronaut Mae Jemison and neuroscientist/actress Mayim Bialik. The [TPT SciGirls](#) television show engages girls (and boys) around STEM investigation. The program also provides resources for girls and educators including activities, role model profiles, professional development, and an interactive website. Also look for featured scientists on the ["In the News" section of the MnSTA website](#).

*Returning to Classroom Instruction in Science

The guidance that was given by MDE and the Minnesota Dept. of Health for Arts classes that are held in specific spaces can also be applied to science and STEM instruction.

Arts classes that cannot operate in the classroom may continue to be held indoors outside of individual classrooms if they are able to follow the Music Activities Guidance and the health and safety measures laid out for art classes in the [2020-21 Planning Guide for Schools](#). If the guidance cannot be followed, arts classes must be held in the classroom or outside (weather permitting).

The National Science Teachers Association has some [safety considerations](#) in returning to science classrooms and laboratories, especially in this blog: [Safety Recommendations for Opening the new School Year](#).

Teacher Events and Workshops

***Teach Outdoors! Minnesota virtual workshops, Wednesdays in March 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.](#)

- March 10: Immersive Virtual Learning: Creating an interactive “outdoor classroom”
- March 17: Sit Spots
- YES! Outdoor Project Overview
- March 31: Maple Syruping

[More resources for teaching outdoors!](#)

***Responses to Flooding on the Lower Mississippi, March 16 6 PM, Webinar**

Dive in to the history of floods and flood control in the Mississippi Delta in the next Waters to the Sea® Stories webinar. Loyola University professor and esteemed environmental communicator Dr. Bob Thomas will guide us through the murky waters of human impacts on and responses to river flooding. CGEE’s John Shepard will share how the [Dynamic Delta Online](#) and [Waters to the Sea®: Mississippi River Adventure](#) learning programs can help you teach these topics in the classroom. [Information and Registration.](#)

Dinner on the Lakes – virtual talk series

Please join us for Dinner on the Lakes, an informal talk series developed by educators for educators and their families. We invite you to cozy up to your computer whether you are working late or eating dinner with your family to listen and participate in the topic of the evening. Participants will learn about upcoming events and opportunities and can network with each other in this growing community of practice. [Register](#)

All talks are on the third Tuesday of the month from 6 p.m. to 7 p.m.

- March 16: iNaturalist and the CGLL Great Lakes Bioblitz, Marte Kitson, Minnesota Sea Grant
- April 20: Exploring Vernal Pools with Students, Billie Waugh, South Terrace Elementary School
- May 18: Citizen Science in the Classroom, Jennifer Flynn, Hermantown Elementary School

***Creating Equity in Science Education, March 18, 6 PM Webinar**

In this panel webinar, science advocates will discuss the challenges of creating equitable opportunities for teaching students in science education. We all know that it is a challenge, but through this dialogue, implications and considerations will be highlighted to provide participants ideas for overcoming and successfully educating underrepresented students. This event is presented by the [STEM Teacher Leadership Network](#). [Registration.](#) [Intro Blog](#)

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. Price: \$10 per session (includes recording). [Information and registration.](#)

***iNaturalist and the Great Lakes Blitz to Enhance your Curriculum, April 7 and 14, 4 PM, Online**

Join Minnesota and Wisconsin Sea Grant for a two session workshop series that explores ways to use iNaturalist to enhance your curriculum across a variety of subjects. During the course of this two day series learn how to use iNaturalist to integrate nature observation into art, cultural appreciation, geography, math, writing, biology and more. Learn about how you can use the Great Lakes BioBlitz to increase Great Lakes literacy in your learners. [Program intro video](#). [Workshop information and Registration](#)

NSTA Engage Virtual Conference April 12 – May 8

Experience NSTA's premier event of the year with Engage: Spring21. The conference will feature inspiring keynote presentations, motivating sessions, unconferences, Marketplace Partner workshops, thought leadership, and so much more. Participate in rich, real-time dialogue with like-minded educators from around the country, listen to expert speakers on your own schedule, and drop in on lively social networking events at Engage: Spring21. All sessions will be available in the on-demand library for 90 days following the event. [More Information](#)



- Elementary April 12 – 17
- Middle Level April 19 – 24
- High School April 26 – May 1
- Postsecondary and Informal Education May 3 – 8

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](#)

***What IS Social Justice Teaching in the Science Classroom NSTA virtual Miniseries, June 5, 12, 19, 26 (March dates sold out)**

Join NSTA for this special four-part, interactive, virtual miniseries, which is jointly hosted by the Association for Multicultural Science Education (AMSE) and NSTA's Committee on Multicultural / Equity in Science Education. Scheduled throughout the month of March, this miniseries is your source for resources and strategies for motivating and enhancing the participation of traditionally underrepresented students in science through the lens of equity and social justice. All sessions are Saturdays 10:30 – 1:00 Central Time. [Information](#)



- June 5: Designing for Rightful Presence in K-12 Science Teaching and Learning
- June 12: Critical Affinity Spaces for Science Educators
- June 19: Toward Field-Based Science Education that Contributes to Just, Sustainable and Culturally Thriving Worlds
- June 26: Defining Social Justice in our Science Classroom

***Compass to Nature: Teaching in the Outdoor Classroom, June 9 – July 21, 2 – 4 PM, webinars**

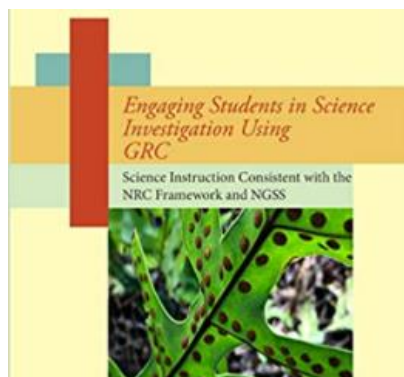
This weekly distance learning series features the innovative [Compass to Nature](#), a proven-effective method to teaching outdoors. Join us as we explore the four cardinal directions for the Compass to Nature: place-based education, phenology, journals, and naturalists, plus the magnetic force of the sense of wonder, through indoor presentations and outdoor field exercises to build or enhance your skills. We will also examine impact to teachers, students, and families; school curriculum and academic standards; and distance education options for outdoor classrooms. The series will culminate with the opportunity to reflect, plan, and share how you can apply the Compass to Nature to your site. Presented by the Prairie Wetland Learning Center in Fergus Falls. [Information and Registration](#).

***VisChem: Conceptual Understanding in Chemistry, July 6-9. 12-14, Online**

The VisChem Approach uses carefully produced dynamic visualizations with teaching strategies informed by a cognitive learning model. Participants who complete the institute receive a \$1000 stipend. Application Deadline March 31. [More Information](#)

***Engaging Students in Investigation using GRC, elementary July 12 – 13, secondary July 14-15, online**

Join us for two days of professional learning that will model effective science instruction that is consistent with research about how students learn. These sessions, based on the *Gather, Reason, and Communicate* framework, will model effective ways to engage students and teachers in doing science Investigations in person and virtually, which leads to deeper science knowledge using instructional strategies consistent with the new Minnesota Science Education Standards.



Brett Moulding and Peter McLaren, NGSS and Framework writers, will lead this workshop, live online. Participants will receive a copy of the book *Engaging Students in Science Investigation Using GRC* and the materials to do the investigations during the PD. The book describes how to engage students in doing three-dimensional science investigations aligned to standards. The book and professional development provide insights and recommendations for how to effectively use a set of over 360 investigations to teach to the new standards. The investigations were developed by teachers working in collaboration with Brett Moulding and presented in a useful lesson plan format. For background on the GRC framework and to see lessons go to [Phenomenal GRC Lessons](#)

- Elementary: July 12 & 13, Online 8:30 PM – 3:30PM, [Registration](#)
- Secondary: July 14 & 15, Online 8:30 PM – 3:30PM, [Registration](#)
- Fee: \$250 includes workshop investigation materials and a book mailed to you.
- Both workshops have limited capacity.

ESTEP Professional Development for the new 6th grade Earth Science Standards, in person

This will be a one week, bootcamp style, regional workshop that incorporates earth and space science content of the new standards, as well as teach you how to develop three-dimensional units. We'll help you choose phenomena, write storylines and lessons, and walk you through investigations that you can use to engage your students. We will provide ongoing support as you begin your journey and create regional cohorts so you aren't doing it alone.

- Bemidji, July 26-30
- Metro area, August 2 – 6

The workshop is organized by the Minnesota Science Teachers Association and led by well-known Minnesota earth science teachers and professors. [Article introducing the program](#). [Workshop Information and application](#).

Summer Institute for Climate Change Education Regrounding in Truth, July 28-30, online



Gain the skills, tools, and resources to teach climate change in all subject areas. This three-day experience from Climate Generation will include networking with a national audience, as well as one full day dedicated to working, planning, and learning with regional cohorts. On-screen time will be segmented, with the opportunity to choose which sessions you would like to attend. [Information and Registration](#)

***Equity in STEM education professional development**

The IDEAL Center at the Science Museum of Minnesota invites school and district leadership teams to apply for the [2021–2022 PAGE District Leadership Program](#), which will be offered virtually this year. PAGE is dedicated to

addressing achievement disparities in STEM education on the basis of gender, race, class, ethnicity, disability, language, and sexual orientation at a systems level. PAGE is an 11-day program with a five-day online institute during the summer of 2021, and three two-day online Colloquia during the 2021–2022 school year. [Information and registration](#)

*Modeling Instruction Workshops

The [American Modeling Teaching Association](#) is offering the following virtual courses this summer:

- Introduction to Modeling in Biology
- Introduction to Modeling Instruction in Chemistry I and II
- Introduction to Modeling Instruction in Middle School
- Introduction to Modeling Instruction in Mechanics (Physics)

[Information and Registration](#)

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.



Teacher and School Awards and Opportunities

*Green Corps

Minnesota GreenCorps is now accepting applications from organizations interested in hosting an AmeriCorps member for the 2021-2022 program year. The MPCA plans to place up to 48 full-time members with host sites

across the state. Members serve approximately 40 hours a week for 11 months from September 2021 through August 2022. **Applications are due Tuesday, March 16, 2021.** [Information](#)

***ACS Hach – High School Chemistry Grant**

Teachers can request up to \$ 1,500 to be applied toward Laboratory Equipment and Supplies, Instructional Materials, Professional Development and Student – Conducted Field Studies. [Information and application](#) The deadline April 14, 2021.

Other Awards

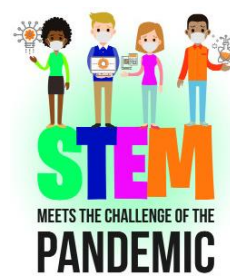
Check out information about the following awards programs and consider applying.

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

School Programs and Resources

***STEM Meets the Challenge of the Pandemic**

The free educational resources available at stemleadstheaway.org share the ways that engineers, scientists, and other STEM professionals are using science, engineering, technology and mathematics to find innovative solutions to the challenges introduced by COVID-19.



- The [Explore STEM Careers](#) webpage, features video profiles of engineers, scientists, and other STEM professionals who are making the world a better place by designing cutting-edge solutions to problems and answering important questions introduced by the pandemic
- The [Educator Resources](#) webpage provides tips and ideas for engaging students in reflection and discussion. Secondary teachers can request virtual mentoring experiences with STEM professionals.
- The project culminates with a [Virtual Professional Summit](#) in May, with discounts for educators.

Minnesota on the Map – GIS competition

Create an online GIS (Geographic Information System) story map on any topic of interest within the borders of Minnesota. Research the topic, map geographic findings, and present findings in a story map entry. Each school or club submits up to five entries to the state competition. Winners at the state level go on to national competition. Registration is due April 9 and the entries deadline is May 21. [Information and Registration](#). The site also has training for students. All Minnesota schools and youth organizations are eligible for free ArcGIS Online Accounts. [GIS Information](#) from the Department of Education.

***Outdoor Lessons for K-12 Students**

Teaching outdoors is easier than you think. The outdoors is a place to inspire learning, get fresh air, lift moods, and reduce virus transmission. Use this [outdoor lessons webpage](#) to find grab-and-go lessons, student handouts, and videos that teachers can use RIGHT NOW to teach outdoors. The website organizes lessons and resources by elementary, middle, and high school levels. Developed by the Minnesota Department of Natural Resources.

***Chemistry education resources for teachers**

The American Chemical Society is offering various educational resources for free during the pandemic. These include activities, lessons, books, videos, organizations and mentoring. [ACS resources](#)

*Landscape Arboretum Field Trip-in-a-Box, Maple Syrup, Free tickets



The Arboretum team of educators has developed hands-on plant science Activity Sets for elementary school classrooms for this winter. Based on the popular Arboretum Field Trip and Plantmobile themes, these mailed-to-you sets provide Arboretum style hands-on plant experiences no matter if you are in-person, on-line, or in a hybrid learning model. [Field trip in-a-box sets.](#)

In addition, the Arboretum has many scholarship opportunities available for schools with greater than 50% free and reduced lunch percentage. Scholarships provide \$175 classroom activity set materials + Virtual content for Free.

Educators can get two free tickets to visit the Arboretum during March. [Information.](#) Also learn about [making maple syrup](#) through online activities, videos and quizzes.

Race for the Planet



Project Green Schools (PGS) is currently reaching out to schools in our second year of “Race for the Planet: VIRTUAL HOME EDITION”. We invite you to be part of this exciting way to engage students, schools, and communities in meaningful climate action. Participants compete in games and challenges focusing on energy, water, waste, and climate change, to raise support and funds that support a unique project goal that Green’s Up Your School/Community.

Hosting kits with instructions, challenge materials, videos for opening/closing ceremonies, marketing & fundraising materials are available to registered participants.

Note: We suggest hosting *Race for the Planet events (held virtually at this time)* during Earth Day/Week, Field Day, or a time that is meaningful to your community. [Information and Registration.](#)

STEAM at Work for Kids

[STEAM at Work 4 Kids](#) is a website for all kinds of kids, especially ages 8-12, to meet all kinds of people who work in all kinds of STEAM fields. Our goal is to inspire kids to dream big and see themselves working in science. When they find an interesting topic, kids can learn more by reading the recommended books and websites following each interview.

SciStarter citizen science projects

Citizen science enables people from all walks of life to advance science research. Have your class join a project or start your own. A couple examples:

- Play in the Snow – gather data on the snowfall around backyards to validate scientific measurements. All that is needed is a yardstick
- Track Plastic Pollution – make observations of where plastic debris ends up.

[SciStarters website.](#)



Change the Face of Computer Science

Code.org has produced a video to inspire or encourage black students to try computer science and let them know they belong. [Video link.](#) [Code.org resources for schools.](#)

Student Programs, Awards and Competitions

*Go4Brains for high School Students, August 2-6, Minneapolis

[Go4Brains](#) is a week long, paid, summer experience at the University of Minnesota for Twin Cities high school students from historically underrepresented groups. The goal is to learn more and get excited about Neuroscience (brains!) and related careers. The application process is a single page plus one reference. [Program Information](#). Application deadline is March 15



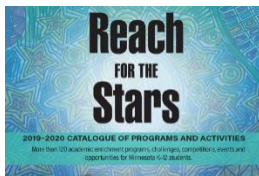
*Minnesota Youth Institute

The University of Minnesota College of Food, Agricultural and Natural Resource Sciences invites high school students to participate in this year's virtual Minnesota Youth Institute on May 17. This program offers a tremendous opportunity for teens to propose solutions to local and global hunger issues while gaining access to scholarships, faculty connections, and programs in the CFANS at the U of M. Registration and papers must be submitted by April 12. Every participant is awarded a \$1000 scholarship. [More Information](#).

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,
[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