

Science Update

August 2021



Donate used textbooks
to Africa students

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.

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

*Rulemaking for the science standards nearly done

The Dual Notice of Adoption was published on Monday, May 17, 2021. The department did not receive the required number of hearing requests so the virtual hearing scheduled for July 23, 2021, was canceled. The proposed rule has been submitted to the Office of Administrative Hearings for final review by the administrative law judge, probably with the next month. The rulemaking developments are posted on the [Science Rulemaking page](#).

Transition to the new science standards

With the delay of the date for full implementation of the new standards by 2024-25, districts and teachers will need to decide if they want to delay the transition timeline they may have developed. One factor they may be considering is that the MCA exam will not transition to the new standards until spring 2025. However the new standards and the shifts in pedagogy associated with them are likely to result in improved science learning and it may be wise to give students those opportunities as soon as is feasible. Plus the improved learning may help them perform better on the current MCA. Districts have several factors to consider in their transition plans, including staffing, curriculum materials, and time for planning. [Read John Olson's MnSTA article](#) about the standards delay and planning for the transition.

*Give your used textbooks a second life – in Africa

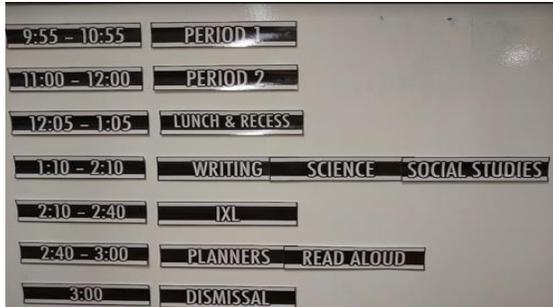
As you clean out your classrooms this fall or purchase new instructional materials, consider donating the used books to Books for Africa. Based in St. Paul, this non-profit organization is the largest donator of books to African schools and libraries with over 50 millions books donated to date. You may drop them off at their St. Paul warehouse or ship them to their Atlanta warehouse. Also consider a fund-raiser to cover the costs for shipping to Africa. Information at the [Books for Africa website](#).

*MDE Science Specialist Transition

John Olson is retiring and the MN Dept. of Education (MDE) is in the process of hiring a new science specialist. During the transition, emails with MDE science questions should be directed to mde.academic-standards@state.mn.us. John will continue with science education teaching, professional development, and some projects. John's personal email is johnolson98@gmail.com.

Teacher Events and Workshops

*Increasing Integration of Science with Mathematics in Elementary Schools, Sep. 30 noon, Online



9:55 - 10:55	PERIOD 1
11:00 - 12:00	PERIOD 2
12:05 - 1:05	LUNCH & RECESS
1:10 - 2:10	WRITING SCIENCE SOCIAL STUDIES
2:10 - 2:40	IXL
2:40 - 3:00	PLANNERS READ ALOUD
3:00	DISMISSAL

District, school and teacher leaders are encouraged to attend this two hour webinar. When a suggestion was made to a 3rd grade teacher to illustrate calculations of elapsed time using how day length changes during the Earth's annual revolution around the sun she objected by saying "but that's science!". Because math, however, is an integral part of many subjects in science, teaching them together at the elementary school level helps provide a solid foundation for middle school. In this webinar participants will see many illustrations of how science

can be integrated more explicitly with math using data accessed from the web to more effectively engage and motivate students. Reference to specific academic standards in both science and math will be made.

For more information go to www.circleofillumination.com. To register please contact Dr. Lilienfeld by September 27th, 2021 at 5 pm at: amy@circleofillumination.com.

*MnSTA Conference on Science Education, Oct 28-Nov. 1, Online

A Clear Vision for Science Education: All Students, All Standards, All Voices is the theme for the fall MnCOSE conference. This virtual event allows you to once again participate from the comfort of your home without travel or substitute costs. In addition, just like last year, your registration gets you access to all presentations for the rest of the school year. Plus, stay tuned for information about local events taking place with the conference!



The 2021 MnCOSE strands include some traditional content-focused strands as well as some strands focusing on the teaching and learning pedagogy within science content and across grade bands. In addition to their placement in relevant strands, each MnCOSE21 session will also be tagged with the relevant science content and most appropriate grade range.

MnCOSE21 Strands are

- **Life Sciences**
- **Physical Sciences** (Chemistry & Physics)
- **Earth & Space Sciences**
- **Leveraging Technology:** Lessons Learned from Distance Learning
- **Diversity and Inclusion:** Equity, Culturally Responsive Teaching, Social-Emotional Learning in the Science Classroom
- **Science Communities:** Learning, Growing, and Connecting with Others
- **Exhibitor Sessions:** Presentations by Exhibitors on Products and Services

Save the date and plan to share your great ideas. Presenters get a 50% discount on the fee. [More Information.](#)

***New Climate Literacy Certificate**

With the new Climate Literacy Certificate from the Hamline School of Education and Leadership, students will learn the communication, education, and organizing skills to drive solutions to climate change. The certificate, which can be completed in one year, is open to anyone with a bachelor's degree. Students can complete the certificate entirely online, or in a hybrid online/on-campus format if they choose. [More Information.](#)

Project WET online training: *Climate, Water and Resilience

Project WET's hands-on, science-based *Climate, Water & Resilience* curriculum helps educators feel confident addressing climate change in the classroom and beyond. Aligned with Common Core and NGSS standards, this program guides teachers and students through nine engaging activities that empower them to combat climate change and build a more resilient future. The curriculum covers a wide variety of phenomena encompassed by climate change, including weather vs. climate, the greenhouse effect, sea-level rise, ocean acidification, soil moisture and agriculture, freeze-thaw cycles, aquatic invasive species, shared water resources, and waterborne disease. The virtual training provides one year access to the self-paced training and the digital educator guide. [More Information.](#)

Mexico: Whale Ecology and Marine Research, January 2022

The waters of Baja, Mexico are home to more than a third of the world's marine mammals. Travel to the Gulf of California and the shores of the Pacific to study two of the most charismatic - the grey whale and the humpback. Work with researchers to collect acoustic recordings, DNA samples, and behavioral data on these immense animals.

The course, hosted by Hamline University, will happen during J-term (January) of 2022, but the registration deadline is the end of September 2021. Please visit the [course website](#) and/or reach out to Patty Born, program director, with questions. pselly01@hamline.edu

Teacher and School Awards and Opportunities

***Climate Generation receives NSCE Friend of the Planet Award**



The National Center for Science Education (NCSE) has awarded Climate Generation a 2021 Friend of the Planet award in recognition of the organization's tireless efforts to help individuals and communities engage in solutions to climate change. The Friend of the Planet awards are presented annually to a select few whose efforts to support NCSE and advance its goal of defending and supporting the teaching of climate science have been truly outstanding.

Based in Minneapolis, Climate Generation: A Will Steger Legacy, provides support for climate change education and advocacy through curriculum materials, educator training, public education, and youth empowerment. More Information about [Climate Generation programs.](#)

***MN Teachers selected for NCSE Curriculum Study**

Janelle Milliken, Cheryl Moertal and Laura Unterholzner have teamed up at Century High School in Rochester for the past 20 years. Now they are taking on the challenge to develop a new 9th-grade environmental science course. They chose to participate in the NCSE



curriculum study to deepen their understanding of how to address misconceptions on the topic as well as to make connections with like-minded educators. [Information about the program.](#)

***Be recognized for going green: Green Ribbon Awards**



The Green Ribbon Schools Award from the U.S. Department of Education honors schools, districts and higher education institutions that save energy and reduce operating costs, create environmentally friendly learning spaces, promote student health, and incorporate environmental sustainability into the curriculum. Awardees receive a plaque for the school, local recognition, and an invitation to the national award ceremony in Washington, D.C.

Schools complete an application that documents their accomplishments and submits it to the MN Dept. of Education by early January. Most Minnesota schools that submit a quality application receive the national award. [More Information and application materials.](#)

***More Support for going green: GreenStep Schools**

Picture this: *One step at a time...*, teams of schools, districts, students, parents, and a supporting community of volunteers, non-profits, businesses, and local and state government agencies all working together to help schools and their community take actions and build their capacity to meet the challenges and opportunities of the future: preparing children for a changing economy, protecting our environment and community health, and harvesting the benefits of a clean energy future—all with guidance, assistance, and recognition from MN GreenStep Schools.



Minnesota GreenStep Schools program a free and voluntary statewide best practices framework, community of practice, and recognition program for public and private K-12 schools and districts to reduce environmental impact and costs, improve health and well-being of students and staff, and provide effective environmental and sustainability education. [More Information](#)

***Presidential Awards have a new timeline**

Nominations are now open for the Presidential Award for Excellence in Mathematics and Science Teaching. This year the award is available to Secondary teachers. This includes teachers of engineering and computer science. This is a great opportunity to reflect on your teaching strengths, document your accomplishments, and grow your leadership. The recognition includes ceremonies in Washington DC and \$10,000. There is support in completing the application from past awardees. The application period begins September 1 and ends February 6. [More Information.](#)

***MnSTA Science Teaching Award**

The Science Teaching Award from the Minnesota Science Teachers Assn. recognizes MnSTA members who have a quality science teaching approach and have an idea for a classroom project that could be funded with a \$1000 grant. The application is relatively simple. The recipient is recognized at the MnSTA conference in November. The application is due in early October. [More information.](#)

***NSTA regional representative for the Council**

The National Science Teaching Association is seeking a representative for Region IX (MN, ND and SD) for their Council of regional representatives. Council member serve for a three year term and participate in Board/Council meetings, NSTA conferences and the National Congress on Science Education. They also promote NSTA in their region. You can submit nominations and applications at the [NSTA Board/Council site](#). Meagan Earnest of St. Paul is currently on the NSTA Board as the Informal Education director.

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

***Science Instruction Safety Documents updated and online**

The Council of State Science Supervisors (CSSS) in conjunction with the safety professionals at Flinn Scientific, updated the former CSSS safety documents into digital formats and modernized these three individual resources (2021) for use by educators across the USA.

There is an Elementary Science Safety Document; a High School Science Safety Document; and an Elementary/Middle School STEM & Tool Safety Document for free download. These are recommended for posting on your district's science intranet site for ready access by all your teachers of science and support staff. [Information and downloads.](#)



***Summer Olympics and Science**

Check out the resources explaining the science behind the Olympics, which have been posted on [the MnSTA website](#).

***Nova Labs presents Evolution Lab**

Explore the evidence for evolution while playing the Evolution Lab game. There are 6 interactive "missions" in the game. By completing the missions and interactive worksheet, students gain a better understanding of evolution. [Information.](#)

***Innovate to Mitigate- National Competition to address global Warming**

Innovate to Mitigate challenges 8th–12th grade students to submit ideas that will mitigate climate change by reducing greenhouse gases.

- Invite your students to study and submit innovative mitigation strategies
- Engage students in problem-based learning that has meaningful real-world impact
- Foster collaboration on communication strategies, social impacts, energy conservation, technical innovations, or carbon sequestration
- Give students the chance to earn public recognition and prizes!

Information

***ZOOMS STEM Design Challenge from the MN Zoo**

If you are a grade 3-12 teacher looking for ways to engage your students in authentic integrated STEM, join the ZOOMS STEM Design Challenge! Participation is free!



Registered teachers will receive access to a free virtual training in September, design challenge supporting curriculum resources for both in person and distance learning, and ongoing implementation support throughout the school year from Zoo education staff.

2021-2022 ZOOMS Design Challenges - *Engineer for the Minnesota Zoo's Gray Wolf Pack*

- Gray Wolf Enrichment Design: Design an enrichment to encourage natural behaviors and meet the needs of the 'Funny River Five' gray wolf pack.
- Wolf Ridge Expansion Exhibit Design Challenge: Design the proposed concept in the Zoo's Pathway to Nature Masterplan involving a new wolf exhibit expansion called 'Wolf Ridge' to enhance the currently undeveloped space for the wolves, visitors, and zookeepers.

More Information.

***Future City Competition: Design a Waste-free City**

DiscoverE's Future City starts with a question—how can we make the world a better place? To answer it, 6th, 7th, and 8th grade students imagine, research, design, and build cities of the future that showcase their solution to a citywide sustainability issue. Past topics include stormwater management, urban agriculture, public spaces, and green energy. The 2021-2022 theme is *Designing a Waste-Free City*.

Cost is \$25 per school or program. Student teams work with their educator and STEM mentor to create the competition deliverables. Looking for a mentor to help your students in this competition? Contact [MnDOT STEM Outreach](#). [Information on the Future City Competition.](#)

Minnesota Forests: Ojibwe and Dakota PLT lessons



Use Minnesota forests as your "window to the world" to integrate indigenous Ojibwe and Dakota content into your K-8 curriculum. Your students will love the hands-on learning and connections to the real world!

MN Project Learning Tree has developed [seven lessons](#) to help meet Minnesota's academic standards in science, social studies, and ELA, while sharing relevant, place-based knowledge about the people who have inhabited our state for hundreds of years. The webpage also includes important teacher tools for understanding about [Indian lands in Minnesota](#), treaties, [vocabulary and pronunciation guides](#), and more.

Free resources for teaching how science works

[Decoding Science](#) is a free interactive resource from the National Academies of Sciences, Engineering and medicine. It's all vetted by experts and ready to use in your classroom.

- A 90-second video on how science works
- Clear answers to challenging questions
- Stories from real-life scientists
- And more...

STARBASE STEM Kits: Surviving Mars, online and in-person resources

Fifth grade students become Mars explorers as they engage in hands-on STEM lessons to plan and prepare of a mission to Mars. Students experience all area of STEM as the determine the purpose of the mission, design a Mars Base, practice coding, program a robot, design a Mars lander, investigate the vacuum of Space, conduct experiments with a virtual rocket and more! Students will make observations, ask questions, conduct experiments, collect and analyze data, make predictions, and create and analyze designs. Connections to STEM careers are embedded throughout the activities. Free kits are available for each student. [Program preview](#) password: starbase. For information starbase@starbasemn.org



PLT "Explore Your Environment" K-8 Activity Guide Released

Project Learning Tree (PLT) released a new curriculum guide to engage kindergarten through grade 8 students in exploring their environment. Fifty field-tested, hands-on activities integrate investigations of nature with science, math, English language arts, and social studies.

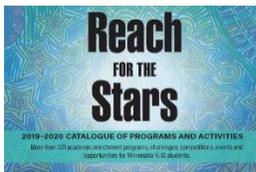
Educators can obtain a copy of PLT's [Explore Your Environment: K-8 Activity Guide](#) directly from [PLT's Shop](#), from Amazon and other places where books are sold, or by attending a local [PLT professional development workshop](#) conducted by PLT's 50-state network of 75 coordinators and 1,000 facilitators across the country. [Minnesota PLT site](#).

Student Programs, Awards and Competitions

Science and Engineering Competitions

Check out the follow programs 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
[EE Portal @MAEE](#) environmental education resources
[MN Assn. for Environmental Education](#)
[MN Earth Science Teachers Assn.](#)
[Get – STEM](#) Connections between schools and businesses
[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