



Science Update

June, 2018



Prepare for new science standards

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.

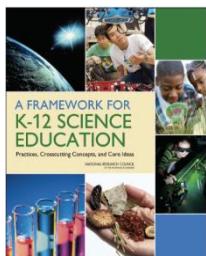
Note: MDE does not endorse any resource or event that is not conducted by MDE.

* indicates an item that was not in the previous edition

News

*Science Standards Committee named. Start preparing for likely changes.

37 teachers, professors, scientists, administrators, informal educators, and community members were chosen for the Minnesota Science Standards Review Committee. Their names and affiliations are listed at the [MDE Science website](#) (near the bottom of the page). While you are there also review the Assumptions that will guide the next standards. The committee begins their work August 1 with a three day workshop and then will meet monthly until April.



You may start to prepare for the new standards by becoming familiar with the basic reference document that will be used by the committee, *A Framework for K-12 Science Education*, by the National Research Council. This document is available as a free download at www.nap.edu. More information about how the *Framework* and how it may impact new standards is described in a series of articles at the [MnSTA Science Standards website](#).

*3 MN schools and 1 college received national Green Ribbon Schools Awards

The U.S. Department of Education announced Green Ribbon Schools Awards to

- Gustavus Adolphus College, St. Peter
- Moreland Arts and Health and Magnet School, West St. Paul
- North Park Elementary School, Fridley
- River's Edge Academy, St. Paul



They demonstrated exemplary practices for reducing energy and water consumption, promoting health and wellness, and providing quality environmental education. They will be recognized by ceremonies in Washington DC in September. Highlights about the schools are at [this site](#).

Applications for this award are available in the fall. Information is at the [MDE Green Ribbon Schools site](#) and the [US Dept. of Education Green Ribbon Schools website](#).

Teaching of Climate Change Science – MnSTA position statement

The Minnesota Science Teachers Assn. authored a paper that summarizes the research on climate change science, strategies for teaching about climate change, and significant resources for teachers. The purpose of the paper is to highlight the importance for students to learn about the impacts of climate change and to provide a professional statement of best practices in teaching the science of climate change. Position papers may be used as justification for the science you teach. The paper is posted at the [MnSTA position statement page](#).

Cleaning out your textbooks? Give them a second life in Africa.



Help end the book draught in Africa by donating textbooks and other learning materials through Minnesota-based Books for Africa. BFA collects, ships and distributes books to students of all ages in Africa. They are the largest shipper of donated text and library books to the African continent. They collect all types of books appropriate for African students. Children's books, math and science textbooks and dictionaries as especially needed. As a general guideline, books should be less than fifteen years old. You may drop off books at their St. Paul warehouse or ship them to the Atlanta workshop. For details, contact the [BFA book donation website](#).

Teacher Events and Workshops

***Biomolecular Structure Class, June 13 – 29, NDSU, Fargo**

The target audiences for this course are current or future high school STEM teachers in ND, SD or MN. This course focuses on providing an analytical understanding of the atomic structure of biomolecules like proteins, nucleic acids and their complex macromolecular assemblies and will provide teachers with tools and resources to teach their students. Course enrollment is limited to 10 and includes housing, meals, and upon completion a stipend to cover tuition. See the [course website](#) for course details.

Summer Learning from the Works of Scientists, June 14, Minneapolis

In this workshop at the Bakken Museum, middle and high school teachers will develop a deeper understanding of key practices for Close Reading—and then apply this understanding to develop lessons for use in the science classroom. Topics covered will include selecting text, creating text-dependent questions, reading strategies that actively engage students with challenging text, and discussion techniques that promote engagement and meaning making.

Following the workshop, participants will have access to an online repository of texts for Close Reading and lessons created by science teachers who have participated in Bakken Teacher Academy workshops. [Registration](#) for this free workshop. Questions: contact bethmurphyconsulting@gmail.com

***Investigate Archeology and Rock Art, June 16, Comfrey**

This teacher workshop at the Jeffers Petroglyphs is offered by [Project Archeology](#). For more information and to register contact Courtney Agenten (cagenten@blc.edu) or 507-344-7727.



***Minnesota Agriculture in the Classroom Programs, June 20-Chanhassen, July 12 – Blackduck, July 26 – 27 – Fairmont, July 31 – Waseca**

The Minnesota Agriculture in the Classroom Program offers unique summer tours that allow educators to get a first-hand look into the world of agriculture. Resources, hands-on activities and interactive ideas for integrating agriculture in your curriculum will be discussed and shared. CEUs and graduate credits available.

Minnesota Minerals Education Workshop, June 19-21, St. Joseph



The MMEW is a three-day workshop for K-12 earth science educators that offers short courses and field trips focused on the geology and mineral resources of Minnesota. On the first day of the workshop, participants may choose between 9 different short course topics taught by professional geologists, government scientists, and K-12 educators. The second and third days of the workshop will involve field trips designed to familiarize participants with the geology and mineral resources in central Minnesota.

Participants will receive a variety of resource materials including rock and mineral samples, lesson plan ideas, posters, maps, videos, and other useful information. The early bird deadline is May 14.

***The River Starts Here, June 21 - 22, Whitewater State Park**

The [River Starts Here Workshop](#) is a first annual collaborative workshop that provides educators with the resources and tools to use water as a context for learning in the classroom, while addressing Minnesota academic standards in science, social studies, and language arts. Dive into hands-on exploration and learn how you can incorporate study of Southeast Minnesotan waters into your educational practices.

Rivers Institutes: St. Croix River June 25-27, Mississippi River July 23-25

Hamline University's Center for Global Environmental Education (CGEE) presents its acclaimed [Rivers Institutes](#), a FREE, field-based professional development opportunity for educators, primarily elementary and middle school teachers.

The Rivers Institutes are designed to increase teachers' science content knowledge and investigation skills and help area educators translate their professional experiences into meaningful, engaging classroom investigations.



Teaching in the Outdoor Classroom, June 25-28, Fergus Falls

The Prairie Wetlands Learning Center is hosting this free [workshop for K-12 teachers](#) concurrently with a biology camp for 5th-6th grade students. Teachers will observe professionals and apply outdoor classroom methods with the youth, outdoors, in a supportive team teaching environment. They will learn innovative ways to use an outdoor classroom and gain knowledge of prairie pothole ecosystems.

Native Studies Summer Workshop, June 25-29, Morton

The [Native Studies Summer Workshop for Educators](#) is designed to increase the knowledge, sensitivity and awareness of Minnesota educators, administrators, and student service providers on the histories, cultures and languages of the federally recognized tribes and bands in Minnesota. This high-quality professional development program will promote a greater understanding of American Indian issues and provide opportunities to critically evaluate educational materials and resources.

Geo-Inquiry Institute, June 26-28, St. Paul

The Minnesota Alliance for Geographic Education, along with National Geographic will offer a 3-day institute for middle school earth science and social studies teachers based on a new interactive geography education program: The Geo-Inquiry Process.

Geo-Inquiry is a process designed to guide educators and students through the phases of asking and answering geographic/environmental questions in order to make a difference in the world. [The Institute](#) will be at Macalester College and will provide 18 CEUs and a \$100 stipend. For further information contact Dave Lanegran (lanegran@macalester.edu).

Institute for Climate Change Education, June 26-28, Collegeville



Scholarships now Available: Through the contributions of several generous donors, thirty teachers will receive full-registration scholarships and limited funding for lodging and travel. Priority will be given to first-time attendees and grades 6-12 teachers with demonstrated need. [Scholarship Application site.](#)

Join a network of teachers from across the country dedicated to bringing science, critical thinking, and problem solving about climate change into the classroom! Visit the [Climate Generation workshop website](#) for more details and registration.

Minnesota Modeling Instruction Workshops, July 9-20, Shakopee

Modeling Instruction is a highly researched, highly effective method of teaching science through collaboration to build and deploy scientific models. From [modelinginstruction.org](#): "Scientists and mathematicians learn by doing: they construct and deploy models of the real world and test their ability to predict new phenomena. Our classrooms focus upon turning students into scientists to replicate this process." The American Modeling Teachers Association has compiled a list of publications on the effectiveness of MI [here](#).

Shakopee High School will host three different Modeling Workshops this summer:

- Mechanics – Jim Reichling and Eric Gettrust
- Chemistry – LeeAnn Richardson and John Vaden
- Biology – Anita Schuchardt
 - July 16-20 only

Contact Casey Rutherford crutherford@shakopee.k12.mn.us. For more information go to the [Workshops website](#) or [Modeling Instruction website](#).

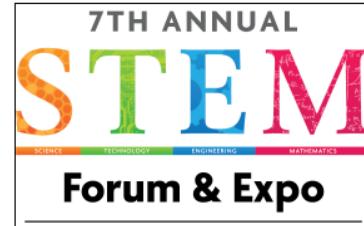
***NSELA Summer Leadership Institute, July 9-11, Philadelphia**

The [National Science Education Leadership Institute](#) has the following strands:

- Science for All Students – Language learning and assessment, including ELL students
- Collaboration with CTE – Connecting CTE and STEM to the workforce
- Connections with Mathematics – Collaborating between math and science leaders
- Computer Science and computational Thinking – Integrating for all students
- Next Gen TIME – Toolkit for Instructional Materials Evaluation

***STEM Forum & Expo, July 11 – 13, Philadelphia**

The [STEM Forum](#) is exclusively focused on bringing STEM educators tools, resources, curricula, and partnership info for successful STEM ed implementation. Pre-K to high school educators will find strands focused on their unique teaching and learning needs. Learn more about this unique, focused event sponsored by three teacher professional organizations: NSTA (science), ITEEA (technology and engineering) and MCTM (math).



***Green STEM Careers Documentary Works July 24 (Mpls) or Aug 2 (St. Paul)**

Are you a creative teacher with a knack for STEM? Or a passionate STEM teacher with a touch of creativity? [Climate Generation](#) is launching our new documentary *Green Careers for a Changing Climate* this fall and we need you! Be one of the first to see this documentary, then work together to create discussion questions and activities for classroom life. [Sign up now](#) for one of the following dates:

- Tuesday, July 24th (9–11 a.m.) at The Wedge Table
- Thursday, August 2nd (3–5 p.m.) at Bang Brewing

Educators will receive a certificate for 1.5 hours of professional development. Please email jenna@climategen.org if you have any questions.

GLOBE Teacher Training Workshop, July 26-31, Grand Forks

Northwest Minnesota K- 12 teachers are invited to attend [UND's Teacher Training Workshop in GLOBE](#) (Global Learning and Observations to Benefit the Environment). Teachers will learn how to use GLOBE's hands-on resources in classroom science investigations involving the earth system. This year's focus will be on two of the GLOBE modules: atmosphere and plant life. They are using a hybrid-style instruction this year, involving both e-training and face-to-face hands-on training.

Computer Science Professional Development, July 28-August 1, Duluth

Join us at the College of St. Scholastica for high-quality [computer science professional development!](#) Teachers and counselors of all levels will find something they can use in their classroom or school. No experience in computer science or programming needed.

- Elementary | Launch CS | July 30 - August 1
- Upper Elementary / Middle School | Creative Coding & Digital Making | July 30 - August 1
- Middle School | Bootstrap: Algebra | July 30 - August 1
- High School | Mobile CSP | July 28 - August 1
- Counselors | Counselors for Computing | July 30 - August 1

WaterWorks! A Drinking Water Institute for Educators, Aug 6-8, Rochester



Enrich your water-related curriculum, investigate drinking water quality and chemistry, learn about inquiry-based models for your classroom, and find water resources within your community. This hands-on workshop allows grade 4-10 science teachers to gather information from expert presenters about how safe, reliable drinking water is delivered to your community, as well as drinking water issues facing Minnesota. Meals and resource binder provided. Choose between two graduate credits or stipend. [Information and Application](#). For questions, contact Lee Schmitt, lschmitt@hamline.edu.

*Mn Zoo Teacher Institutes, August 6-8, 9

ZOOMS Institute August 6 – 8. See the Zoo in a whole new way! This institute will engage teachers in utilizing animals and the Zoo as a tool to integrate engineering concepts into their curriculum, based on the Minnesota State Science Standards. Sessions focus on Engineering BY Animals, Engineering FROM Animals (biomimicry), and Engineering FOR Animals using hands on activities, zoo staff presentations, and behind-the-scenes tours. Only \$50 for three days!

ZOOMS Institute 2.0, August 9: The Minnesota Zoo is committed to its mission of connecting people, animals, and the natural world to save wildlife. Through expert talks and behind the scenes experiences, see how STEM is being used by field biologists, conservationists, and zoo staff to help protect and conserve species both in the zoo and in the wild. Learn ways to engage your students in activities that help make a difference within the context of engineering for conservation. Only \$25 for this engaging day of activities!

[MN Zoo Professional Development Site.](#)

*Environmental Education Conference, August 11, Savage

Looking for resources and ideas to get your students outside? Want to support environmental education in Minnesota? Join the Minnesota Association for Environmental Education for their [annual conference](#): *Making Connections* at McColl Pond in Savage MN



Summer Blended and Online Engineering Education Courses

This summer the University of St. Thomas [Center for Engineering Education](#) is excited to offer three courses for teaching professionals. These courses are designed to develop an understanding of engineering and build educators' engineering portfolio. These courses may be used to fulfill requirements for a Graduate Certificate in Engineering Education as well as towards a master's degree in education. Find more information and how to apply and enroll for free (we are waiving the application fee) at the above link.

Free Tickets for the Nobel Conference - *Living Soil: A Universe Underfoot*, Oct. 2-3, St. Peter

The 54th Nobel Conference, *Living Soil: A Universe Underfoot*, is happening October 2 & 3, 2018 at Gustavus Adolphus College. The Nobel Conference invites participants to consider the vast diversity and complexity of soil, and to ponder the challenges we face in protecting this most fundamental resource. Join 4,000 people on campus for one or both days to experience presentations in microbiology, botany, ecology and soil science; Q&A sessions; and hands-on activities designed for high school students. In addition, to help you prepare students, you may utilize classroom-ready

resources with supplemental readings and activities. High School delegation tickets are FREE and may be ordered by calling 507-933-7520. [More information about the conference.](#)

International Wolf Symposium Educator Day, Oct. 13, Ely

The International Wolf Center is a leader in providing wolf education. Join us for our [Symposium Educator Day](#) to bring relevant, science-based activities and knowledge to your students. Registration for the day includes: breakfast, lunch, daily break refreshments, materials and a copy of the International Wolf Center's *Gray Wolves Gray Matter* curriculum.

The MnSTA Conference on Science Education, Nov 9-10, St. Cloud



It is not too early to request funding, to submit session proposals, and to register. This year's theme is based on water resources, with a keynote by [Steve McComas, the Lake Detective](#) of Blue Water Science.

The event begins Thursday evening with a special themed event including a private screening of *Chasing Coral* at the Paramount Theater. There will be sessions all day Friday with content area strands and a late afternoon social event. Saturday brings water-themed workshops, field trips and license renewal sessions.

More details are available on the [Conference Website](#).

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 at the MnSTA conference. The application is relatively easy and is due September 24. Nomination and application information is available at [this link](#).



School Programs and Instruction Resources

*Student Experiments on the International Space Station

This opportunity gives students across a community the ability to design and propose microgravity experiments to fly in low-Earth orbit on the International Space Station (ISS). One experiment in each community will be selected to fly to ISS. The program is open to school districts serving grades 5-12, informal education organizations and 2- and 4-year colleges. Students across the community are separated into teams of 3-5 students, each team designing and proposing a microgravity experiment, and making the case for why their experiment should be selected for flight to ISS. Interested communities must inquire about the program no later than June 15, 2018.

***Climate Change School Board Resolutions Toolkit.**

Climate Generation is leading a campaign to make climate change education a priority in our schools through local commitments to teach climate change science. Use our new [Climate Commitments: School Board Resolution Toolkit](#) to raise a resolution to your school board that commits your school district to teaching climate change and climate solutions.

***Move Mining Next Gen! video competition**

[Move Mining Next Gen](#) is a free video competition that kids grades K-12 can enter from home or as a school project. Students Learn about minerals and their uses, practice persuasive writing, spread the word about mining's impact on daily life, and maybe even win some money!

The video can be any style: animation, live action, Claymation, PowerPoint... or any style they like! Videos will be judged by a panel of experts, with one prize going to the video entry winning the most online votes.

Student Programs, Awards and Competitions

STEPS camp for girls, June 11 – 15, St. Paul



Girls currently in grade 6 and 8 are invited by the University of St. Thomas for a FREE one-day camp opportunity. STEPS stands for Science, Technology and Engineering Preview Summer. STEPS is a great opportunity for students to be on a college campus, build on their collaborative teamwork skills, think creatively, and have the opportunity to see and work with new technology. For information go to the [camp website](#).

***Girls Fly Boldly with Heather Penny, June 23, Eden Prairie**



Come to Flying Cloud Airport in Eden Prairie on Saturday, June 23 to meet the dynamic Heather Penney – aviator, innovator and true American hero. Enjoy stories, STEM role models, activities with planes, drones & more for K-12 students, including a Crew Lounge where high school participants can meet industry professionals. This is a free afternoon of inspirational, unforgettable fun at the Wings of the North Air Museum, presented by Thomson Reuters. Girls who register early may get free flights. Registration is required and available by [Clicking Here](#).

***Summer Academy for Environmental, Food and Agricultural Sciences, July 16 – 20, Inver Grove Hts.**

Students entering grades 10 – 12 can explore environmental, food and agricultural sciences: practice hands-on wildlife & forestry management, create your own plantings for pollinator health, learn small animal care, make cheese & discover food science, experiment with sustainable practices for clean water, soil & air...wear waders, catch frogs, play in the dirt! This is a joint program of 4-H and Inver Hills Community College. Information and registration is at the [Summer Academy site](#).

***STEM Day at the State Fair, Aug 24, St. Paul**

Get an up-close look at intriguing, interactive adventures brought to the fair by more than 30 organizations in the Minnesota STEM Network, an initiative of SciMathMN, including robots, rocketry, computer coding and more designed for children of all ages. There will be stage shows each hour, including the Physics Force, the UM Raptor Center, and WCCO Weather Science. It all happens in the area south of the grandstand called Dan Patch Park. More info is at the [SciMath^{MN} website](#).



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

[Doug Paulson](#), STEM Integration Specialist, @DPaulsonSTEM

[Jim Wood](#), 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.