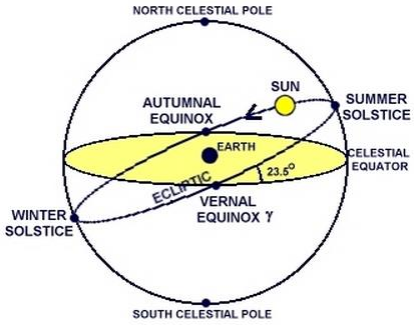
Minnesota Department of Education

Science Update
September, 2014



This periodic update 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. See MDE contacts at the end of this document.

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

Happy Autumnal Equinox!
Sep. 23, 9.29 pm

News

New MN website for STEM resources: mn-stem.com

Mn-STEM was re-launched at STEM Day at the Minnesota State Fair. It contains information and a host of links intended to engage parents, families, educators and young people and provide quick access to Science, Technology, Engineering and Mathematics (STEM) resources, including high-quality STEM learning opportunities in-school and out-of-school.

Minnesota Green Schools Tour

The U.S. Department of Education is conducting tours of schools and districts with exemplary practices in reducing environmental impact and costs, improving the health and wellness of students and staff, and providing quality environmental education.

The tours will be engaging and will feature facilities, food service, recycling, student projects, school gardens, outdoor learning spaces and much more. You are welcome to join any part of the tour. To register go to the Registration Survey. More information, addresses and updates are at the MDE Green Schools website.

Tuesday, September 23rd

8:30 a.m *Event Introduction and Tour:* School of Environmental Studies, Apple Valley
10:30 a.m. *Tour:* Garlough Elementary School, West St Paul,
11:30 a.m. *Lunch:* Dodge Nature Center, West St. Paul
1:00 p.m. *Tour:* Heritage E-STEM Middle School, West St. Paul

Wednesday, September 24th

8:15 a.m. *Tour:* Waconia Public Schools,
11:00 a.m. *Tour:* Jeffers Pond Elementary School, Prior Lake,
12:00 p.m. *Lunch:* Jeffers Pond Elementary School, Prior Lake
1:30 p.m. *Tour:* Five Hawks Elementary School, Prior Lake
3:00 p.m. *Discussion Session:* Prior Lake-Savage Area Schools,

Safety Alert: Methanol Explosions

Several youth and children have been severely burned by methanol fires in the past couple years. A few examples are a “smoke tornado” at a science museum in Reno, a “rainbow demonstration” in New York City and a “whoosh bottle” demonstration in Minnesota. These accidents involved reloading the demonstration from a supply bottle when the apparatus was still hot or had an invisible flame. Here are a few cautions. Only use a small container for the fluid and it keep capped and far from the demo. Never refill the demo. Use a fume hood or safety shield (many sources recommend that methanol not be used on an open bench since the vapors are heavier than air and can spread among viewers). Use a less volatile fluid such as ethanol. See these alerts from the American Chemical Society and Flinn Scientific.

Teacher Events and Workshops

GO4ST8 Physics, Sep. 13, Minnetonka

The meeting will revolve around circular and rotational kinematics and dynamics. These topics are on the new AP Physics 1 exam. They will be approached in ways that are appropriate for a variety of student groups. Saturday, 9 am – noon at Minnetonka High School. Free attendance. Bring a friend. Ask about the GO4ST8 entry in the Aquatennial Milk Carton Boat Race. Click for more information

Magnet Schools of MN STEM Network Meeting, Sep. 25, Apple Valley

Please join us for the fall K-12 Magnet School STEM Network Meeting on September 25th, 8:30 – 10:00 at Valley Middle School of STEM for a special morning with STEM educators. Review information on STEM program design, practical tips for STEM integration, and STEM educational resources. Please register for this no-cost event by emailing Cathy Kindem, Magnet Schools of MN – STEM Network Coordinator.This event is co-sponsored by The Magnet Schools of Minnesota and the Minnesota STEM Network.

Nobel Conference: 50th Anniversary Event, Oct. 7 & 8, St. Peter

This is the 50th anniversary of the Gustavus Adolphus College event. Presenters include: Steven Chu, Steven Weinberg, Freeman Dyson, Sir Harold Kroto, W. Gary Ernst, Harry B. Gray, Svante Paabo, Sean B. Carroll, Jennifer West, Patricia Smith Churchland, and Antonio Damasio. That is a pretty amazing list. Bring your students. The Gustavus Adolphus website has materials teachers can use with their students to provide some background for the event. Check the website for more information, including live streaming.

Earth Science Week, Oct. 12 - 18

“Earth's Connected Systems,” the theme of Earth Science Week 2014, engages young people and others in exploring the ways that geoscience illuminates natural change processes. By deepening our understanding of interactions of Earth systems -- geosphere, hydrosphere, atmosphere, and biosphere -- Earth science helps us manage our greatest challenges and make the most of vital opportunities. Information and a toolkit are available from the the American Geosciences Insitute ate the Earth Science Week website

Science Sessions at Education MN Professional Conference, Oct. 16, St. Paul

MnSTA is presenting a strand of science sessions at the great Minnesota teacher get-together. All sessions are free. Click for the Conference Information

It’s not Magic, It’s Science: Hands-on Science for Teachers
Integrating K-6 Science Learning through the Outdoors, Notebooks, and Word Walls
Writing and Using Good Common Assessments in Science
DIY (Do it Yourself) NANO!

The Minn. Pollution Control Agency will present a session on Green Chemistry followed by a workshop at the end of the day. The presenters are seeking input for presenting Green Chemistry materials. Please complete this short survey.

EdCamp Math & Science Minnesota, Oct. 17, Eden Prairie

EdCamp is an “unconference”, which is educator driven and educator led. Participants on the day of the conference determine what sessions are offered and are free to travel from session to session based on interests. This Edcamp from 9 am – 3 pm is focused on Math and Science and is offered in conjunction with the Minnesota Council of Teachers of Mathematics) and the Minnesota Science Teachers Association). See the event website for more information about Edcamps and this event in particular. Tweet about the conference at #EdcampMSMN!

The Wild Face of Climate Change, Nov. 22, Apple Valley

The Minnesota Zoo and the Will Steger Foundation join forces to:

- Discuss the basic science of climate change and the effects on all living systems on Earth.
- Explain several (broad impacts of climate change including how each is caused, what the current situation and level of impact is, and how it is expected to unfold in the future.
- Give an example of a wildlife species that is clearly affected by each of the highlighted impacts of climate change.
- Lead a discussion, activity, or project with students focused on the impacts of climate change on wildlife in specific habitats around the world.

This workshop for Middle School educators is at the Minnesota Zoo, 8:00 – 4:30. The fee is $60. Click for information and registration.

Geology Lectures, University of Minnesota

The Geological Society of Minnesota offers free public lectures on local and national geology topics about twice per month. These are given by local experts and delivered at the amateur geologist level of technicality. The topics and calendar are posted at the Society Website.

"Hold the Date" for these upcoming conferences

More information will come in future Science Updates

- Excellence in Elementary Engineering Education (E4), Nov. 17, St. Paul
- Minnesota Conference on Science Education (MnSTA), February 20-21, Mankato
- National Conference on Science Education (NSTA), March 12-15, Chicago
- NSTA STEM Forum and Expo, May 20-23, Minneapolis (presenter proposals soon)

Teacher and School Awards and Opportunities

Minn. District Science Leaders Network

District staff that have full-time responsibility for leadership of science curriculum, instruction and/or assessment are invited to join this network. Where a district curriculum coordinator oversees science, they are also invited to participate. The group meets about six times during the year at MDE to focus on a topic of interest and share resources and experience with each other. If you are interested in participating, contact John Olson.

Einstein Fellows

The Albert Einstein Distinguished Educator Fellowship Program provides a unique professional development opportunity for accomplished K-12 educators in the fields of science, technology, engineering, and mathematics (STEM) to serve in the national education arena. Fellows spend eleven months working in a Federal agency or in a U.S. Congressional office, bringing their extensive knowledge and experience in the classroom to education program and/or education policy efforts. Click for information.

Target Field Trip Grants

Target stores award grants to K-12 schools nationwide enabling schools to send a classroom on a field trip to museums, historical sites and other cultural destinations. Each grant is valued up to $700. Funds may be used to cover field trip-related costs such as transportation, ticket fees, resource materials and supplies. Other criteria for selection of grant recipients include the field trip's tie-in to the school's curriculum and the number of students involved. Grants are accepted until noon on September 30. Learn more here.

Science Museum of Minnesota Opportunities

The Science Museum is distributing weekly email communications for schools and teachers announcing teacher previews, bus scholarships, grant opportunities, etc. To participate go to the sign-up site.

Student Awards, Competitions and Programs

eCYBERMISSION

eCYBERMISSION is a free, online collaborative learning competition for students

in grades six through nine offered by the U.S. Army Educational Outreach Program. The competition challenges students to think about real-world applications of STEM by working in teams to identify a problem in their community and use the scientific practices or the engineering design process to find a solution. Students compete for state, regional and national awards, with potential winning of up to $8,000 in U.S. savings bonds.

Students registered by November 5th will receive a Free STEM Research Kit. All registered teachers will receive an eCYBERMISSION Starter Kit, which includes lessons, resources and tools available to introduce the competition in the classroom. Mini-grants are available for supplies and/or professional development for schools with at least 50 participants by contacting Chris Campbell. Information and Registration

Real World Design Challenge

The Real World Design Challenge is an annual aviation design competition for teams of high school students. The Challenge is FREE for students and teachers. Each teacher that signs up a team will receive professional engineering software as well as access to mentors from industry, government, and academia. Teams can register by clicking here. The team's teacher/coach should complete the registration form.

Toshiba/NSTA ExploraVision

ExploraVision is a competition that encourages K-12 students to create and explore a vision of a future technology by combining their imaginations with the tools of science. Teams of two to four students research scientific principles and current technologies as the basis for designing innovative technologies that could exist in 20 years. Students compete for up to $240,000 in savings bonds for college and cool gifts from Toshiba. First- and second-place teams also receive an expenses-paid trip with their families, mentor and coach to Washington, D.C. for a gala awards weekend in June 2015. For information visit the competition website.

National Climate Assessment Resources for Educators

The National Climate Assessment offers a wealth of actionable science about the causes, effects, risks and possible responses to human-caused climate change. NOAA, **USGCRP NCAnet Education Affinity Group** and members of the **CLEAN Network** have developed a series of guides for educators that focus on the regional chapters of the Assessment Report, helping to unpack the key messages of each region and point to related, high-quality online resources.

The NCA also contains information that will help educators and students gain a deeper understanding of climate science through the **Our Changing Climate** section and **Climate Science Supplement**. The content in the NCA is useful and relevant for integration of the Next Generation Science Standards (NGSS) into science education. In these new standards, **educators are asked to integrate engineering design into the structure of science education by raising engineering design to the same level as scientific inquiry** when teaching science disciplines at all levels.

For example, throughout the NCA, particularly in the **Adaptation** and **Infrastructure** sections, educators can find information on climate-related problems and solutions, including those that draw on engineering design. Finally, the **Decision Support** Section provides information on how decision makers across the

country are using climate information to prepare for the impacts of climate change that affect where they work and live.

Health and Climate film and Educational Materials for 6-8th Graders

The Minnesota Department of Health developed a film, *Health and Climate,* which provides an overview of the major climate changes in Minnesota and how these changes are impacting human health. The film describes ways people can adapt to and mitigate climate change. The 27-minute film can be found on MDH's website.

MDH also developed teaching resources to promote the exploration of climate change and public health impacts in more depth. The resources include a climate change vocabulary list and a student study guide; a vocabulary slap game (also called "flyswatter game"); a slide set describing climate change and health effects and a student handout; a computer lab project that explores health datasets related to climate change; a trivia game; a create your own "doodle" or artistic rendering of climate change game; and a discussion guide. The materials are posted on the above. For more information, contact Kristin Raab.

FIRST LEGO League

High Tech Kids has scholarships available for next year's "World Class" FIRST LEGO League season for rookie teams. FIRST LEGO League is for students age 9 to 14. Teams will be studying how we learn and will be presenting how students want and need to learn, as well as building and programming a LEGO Mindstorm robot to complete their chosen missions. Preference is given to teams in rural or urban areas, all girls teams, or teams with students of color and/or poverty. Scholarship covers the cost of a new robot ($449) or FIRST Registration ($225). Applications are available on their website.

FIRST Tech Challenge

High Tech Kids has scholarships available for the 2014-2015 FIRST Tech Challenge, for students in 7th through 12th grade. Students build a robot for the challenge that will be released on September 7th. Students learn how to program a LEGO Mindstorm robot in Robot C or Labview. Preference is given to teams in rural or urban areas, all girls teams, or teams with students of color and/or poverty. Scholarship covers the cost of two items (FIRST Registration, LEGO Mindstorm NXT or Tetrix Building Kit) valued between $415 and $665. Applications are available on their website.

Shell Science Lab Challenge

The Shell Science Lab Challenge, sponsored by Shell Oil Company and administered by NSTA, encourages teachers (grades 6-12) in the U.S. and Canada, who have found innovative ways to deliver quality lab experiences with limited school and laboratory resources, to share their approaches for a chance to win up to $93,000 in prizes, including a grand prize school science lab makeover support package valued at $20,000. For more information about the Challenge or to download an application, click here.

MDE Contacts:

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Dawn Cameron, Science Assessment Specialist,
Jim Wood, Science Assessment Specialist,
Doug Paulson, STEM Integration Specialist,
Send submissions for the Science Update to John Olson

Other Minnesota Connections:

Minn. Dept. of Education Website
Minn. Science Teachers Association
Minn. Frameworks for Science and Mathematics Standards
Get – STEM Connections between schools and businesses
Mn-STEM STEM programs and resources for families, schools and community
Environmental Education resources
Minnesota Academy of Science: