South Dakota Science Teachers' Association

Summer 2015

June 2015 Volume 137

President's Letter—Julie Olson

Dear Colleagues

I hope this newsletter finds you anticipating the study and implementation of the new South Dakota Science Standards! Thank you to all that wrote their representatives, testified to the state board of education, and of course the writing/review teams. Knowing how many of you already engage and teach your students, I am asking all of you to step up to the plate when asked to share your knowledge, skills, and mentoring abilities to aid in the implementation process. Think about saying yes to some part of the process we are embarking on – every little bit helps.

I don't know about you but I am finding myself even busier now that the summer has started than during the school year – just a different kind of busy. On any given summer weekday, you will find me in Sioux Falls at Sanford Research participating in the SERF program (summer educator research fellowship). We get to not only see but participate in research on a number of childhood and adult diseases such as brain cancer and diabetes! It is an amazing process to see a group of researchers, teachers, high school students, undergraduates, and post-docs all come together. The big idea is to inspire more students to enter science fields by working with all levels of the education system.

If you had the chance to attend the "It's All About Science Festival" you would have spent the day engaging in numerous demonstrations (elephant toothpaste, genie in a bottle) and hands-on activities (paper roller-coasters, squishy circuits) and even "speed date a scientist"! Guest presenters engaged the audience in "movie science" and "dancing chemistry." There really was a community of science with not only the above mentioned but representatives from state universities, corporations, and science/engineering groups. I would like to see the SDSTA become involved in this next year. There was a tremendous lineup of professional development opportunities offered for this summer. Hopefully you will find time to recharge and relax.

Sincerely
Julie Olson
2014-16 SDSTA President

Summer 2015

Daniel Swets Robotics Materials Award and Kelly Lane Earth and Space Science Grants

Carrie Tucek, high school chemistry and physics teacher at Wagner Community School (Wagner, SD) won a $5,000 grant for an Aquaponics System to help students learn about the interconnectedness of STEM fields and assist them in forming, testing, and revising scientific ideas to better understand the scientific method and scientific inquiry.

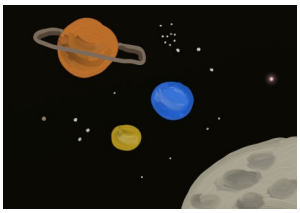
Hope Armstrong, 6th grade general science teacher at Georgia Morse Middle School (Pierre, SD) won a $1,350 grant for incorporating certain novels (and hence, language arts) into her science classes. The selected books are relevant to the pertinent science topics of study to help the students make connections and to promote STEM education.

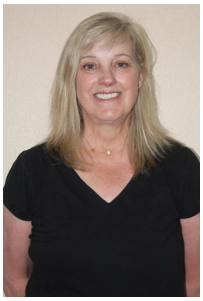
Michael Jones and Jane Karp of Whitewood/Rural Meade Schools won a $4,883 robotics supply grant to start two new FIRST LEGO League teams for grades 4 - 8.

Beth Knedler and Susan Heggestad of the Edith B. Siegrist Vermillion Public Library won a $4,851 robotics supply grant to develop a new VEX robotics program at the library for elementary and middle school students in collaboration with the Vermillion Area Robotics Club, SD Code Club, Clay County 4H, and Vermillion Public Schools.

Marcia Kahler, FLL robotics coach, won a $2,450 robotics supply grant to start a new FIRST TECH Challenge (FTC) team at St. Thomas More High School in Rapid City so that middle school student members of the school system's FIRST LEGO League (FLL) teams can advance to a high school-level robotics program when entering 9th grade.

Donna Degen and Ross Hunter of Southwest Middle School in Rapid City won a $2,000 robotics supply grant to expand their two FLL teams which are in their second year of operation.





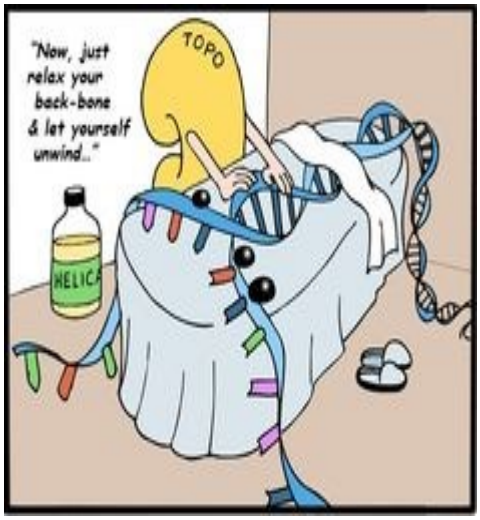
Top Right: Carrie Tucek (Wagenr Community Schools) , Hope Morris (Georgia Morris Middle School Pierre), Michael Jones and Jane Karp (Whitewood/Rural Meade Schools), Susan Heggestad and Beth Knedler (Vermillion Public Library),
Left: Marcia Kahler (St. Thomas More High School), and Donna Degen (Southwest Middle School)

Middle School Fab Lab Grant

The Northrop Grumman Foundation is welcoming submissions for its Fab School Labs online contest, a program that provides public middle schools with an opportunity to make their dreams of a state-of-the-art science lab a reality with grants of up to $100,000.

The contest is designed to drive students' interest in science, technology, engineering, and mathematics by giving public middle school teachers and school administrators the chance to create the STEM lab of their dreams and provide students access to learning tools and technologies that stimulate as well as teach.

For the application information, go to http://www.fabschoollabs.com/



2015 Title II Summer Workshop Schedule—https://www.sdbor.edu/services/research/Research/TitleIIWorkshopSchedule.htm

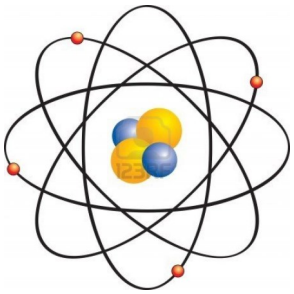
Physics of Atomic Nuclei: Connecting Content and Practices with Applications, Careers and the Sanford Underground Research Facility

July 27 – 31

South Dakota State University

Contact: pnorris@sanfordlab.org

This workshop will focus on development of teacher content knowledge in nuclear science and development and implementation of activities for teachers to use in their classrooms. Nuclear science is an excellent topic to use as a connection between curriculum standards in physical science, chemistry and physics courses, scientific and engineering practices, cross-cutting concepts, the science experiments taking place at Sanford Underground Research Facility, 'real world' applications, and rewarding and well-paying STEM careers. Any middle or high school science teacher in the state of South Dakota is eligible to apply.



Life Science Concepts for Teachers

June 21 – 26

Black Hills State University

Contact: janet.briggs@bhsu.edu

Life Science Concepts for Teachers is designed for teachers in grades 6-12 to develop a deep understanding of life science content through examination of diverse ecosystems on the Great Plains and in the Black Hills. Field studies will focus on biodiversity, interdependent relationships and flow of energy in ecosystems, and adaptation to change. Please note the workshop requires participants to be outside in rugged terrain in the summer in South Dakota. The course will focus on Life Science Core Ideas as described in A Framework for K-12 Science Education. The summer workshop will allow participants to earn 2 hours of graduate credit. Throughout the school year, participants will pursue exemplary practices in science teaching through application of content and reflection upon student learning through electronic and face-to-face follow-up sessions.

STREAM – a Professional Development Workshop with Follow-up Activities for 6-12 Teachers Interested in Science

When: July 19-23, 2015 with support throughout the 2015/2016 school year

Where: South Dakota State University with follow-ups and visits as requested

Who: Team Leaders from SDSU (Browning, Miller, Nepal) and Newell (Heather Brown), Selby (Sam Glantzow), Hoven (Spencer Cody), and Red Cloud

The Science and Technology Resources for Engagement Activity Modules (STREAM) project focuses on enhancing student preparation in sciences through Middle School and High School teacher development by engaging teachers in a content rich course that leads directly to modularized curriculum design and implementation. The project is based on strategic partnerships between South Dakota State University and their partner schools. The project is led by a team of Faculty (from the College of Education and Leadership, the College of Arts and Sciences, and the College of Agriculture and Biological Sciences at SDSU) and partner educators. The team has a solid history of serving High School teachers in South Dakota, a thorough knowledge of AP instruction, and current knowledge of curriculum needs and science standards in South Dakota. STREAM equips teachers to use engineering practices to create current science based activities and effective assessments for their classrooms. Participants will be asked to work in teams to complete three projects: Sustainable Habitat Engineering (SHE), a solar observatory (School-henge), and a sustainable Greenhouse and Window Farm. These projects were developed by rural South Dakota teachers and have been classroom tested. Each of the projects will model Engineering Practices and be linked to the Common Core Mathematics Standards (CCMS), the Framework for K-12 Science Education, and the College, Career, and Civics (C3) Standards. Background concepts, skills, and assessments will be developed along with the projects in a summer institute at SDSU with electronic and face-to-face support across the state being provided throughout the subsequent school year. Participants will be supported with materials, stipends, room and board for the duration of the summer institute and one follow-up workshop. Graduate credit (up to three units) is available.

NSTA Summer Institute—Implementing NGSS

Sheraton Park Hotel at the Anaheim Resort • Anaheim CA • July 9, 2015 (in collaboration with CSTA)
Sheraton Atlantic City Convention Center • Atlantic City NJ • July 28, 2015

The Next Generation Science Standards (NGSS) is bringing about transformative changes in teaching and learning at every level. To make this important transition, it is vital that K–12 teachers of science—including elementary teachers—and school and district leaders have opportunities to participate in professional learning to understand the changes or shifts in the NGSS and to learn how to apply them in the classroom. Strategies are needed for adjusting teaching approaches, making important cross-curricular connections, and assessing student learning.http://www.nsta.org/conferences/summer.aspx

NGSS video lessons on the Teaching Channel

NGSS Videos on the Teaching Channel

Achieve announced that four NGSS videos are now available online through the Teaching Channel. Achieve and Teaching Channel collaborated to produce videos that present an overview of key innovations in the Next Generation Science Standards (NGSS) and a deeper dive into each of the NGSS' three dimensions. The videos are intended to help educators become familiar with the three dimensions of the NGSS and how they will benefit students. For more information, check out this blog post written by NGSS Writing Team Leader Brett Moulding. https://www.teachingchannel.org/videos?q=NGSS

These will help understand the Practice, Cross-cutting concepts, and other components related to the SDSS.

Freebies

Center for Student Work

Produced collaboratively by faculty at Harvard Graduate School of Education and Expeditionary Learning (EL), a leading preK–12 education non-profit, this searchable database of exemplary student projects was created as a tool to inspire and guide teachers as they conduct projects, provoke thinking, and pursue instructional excellence in their preK–12 classrooms. The student work—which includes videos, writing samples, and other materials—is drawn from various elementary, middle, and high school classrooms and disciplines; each resource includes a description of the context in which it was created and the associated learning standards it meets. Science projects include Colorado Fish Field Guide Poster (elementary); Food for Thought (middle level); and Chemistry and Conflict (high school http://centerforstudentwork.elschools.org/

Funa-A-Day Top Ten Science Experiments for Summer

Parents can keep children active in science all summer with this list of 50 at-home science experiments ranging from bubble concoctions and weather experiments to cold chemical reactions and sandy science. Blogger Mary Catherine, an early childhood educator and parent, assembled the list, which includes activities she has blogged about and others that she has done with her son. Though most of the activities are geared toward young children, Mary Catherine notes that teachers of older students have also used the activities. http://fun-a-day.com/summer-science-experiments-for-kids/

Guide to Implementing the NGSS

This report published by the National Academies Press is designed to assist district and school leaders and teachers charged with developing a plan and implementing the NGSS as they change their curriculum, instruction, professional learning, policies, and assessment to align with the new standards. For each of these elements, the report presents recommendations for action around key issues and cautions about potential pitfalls. In addition, the report identifies overarching principles to guide a successful planning and implementation process. http://www.nap.edu/catalog/18802/guide-to-implementing-the-next-generation-science-standards?utm_source=NAP+Newsletter&utm_campaign=1cf054088e-NAP_mail_new_2015_03_31&utm_medium=email&utm_term=0_96101de015-1cf054088e-101830153&mc_cid=1cf054088e&mc_eid=c208354e2c

Ipadapps4teachers—for MS Science

Science educator Mike Eby knows his science and his apps. Check out his blog about iPad use in the classroom, where he shares applications that he has tried and tested in his middle level classroom. The apps are classified in more than a dozen categories from organization and general teaching categories to subject-specific collections. Science categories include Astronomy, Earth Science, Elements and Atoms, Lab Apps/General Science, Life Science/Biology, and Physical Science. http://ipadapps4teachers.blogspot.com/

AstroCamp 2015 for 7th-8th Grade Girls!

AstroCamp 2015, sponsored by the SD Space Grant Consortium and SDSU, will involve hands-on activities in several areas of astronomy including the planets, the sun, and space travel. The camp will also involve several make-and-take projects including a sundial, astronomical images, and 3-D constellations. A full list of activities can be found on the registration site.

During the two-day camp, students will be provided meals (lunch and dinner on Tuesday, breakfast and lunch on Wednesday) and lodging for Tuesday night. We encourage all participants to stay on campus as we will have an evening observing session on Tuesday night (weather permitting).

Camp Instructors:
Judy Vondruska (SDSU) and Lisa Weier (Brookings School District)

Application Form: http://astrocamp2015.questionpro.com

Application Deadline: June 30

Eligibility: Must be entering 7th or 8th grade in Fall 2015

Regional Science Fairs

The South Dakota Science Teachers supports the SD Regional Science fairs by awarding one junior high project winner at each Regional Science fair with a check for $30. The abstracts of those winners are printed in this newsletter. {When a joint project wins, the $30 award is divided two or three ways.} As of this moment, only one abstract has been received. Hopefully, the others will be here and be able to be published in the September Newsletter.

Which Moisturizer Keeps Skin the Most Moist

Areej Nazir - Edison Middle School, SF

By weight, skin is the largest organ of our body, and serves important functions. But as you age your skin stops making water molecules, resulting in dry skin. That doesn't mean that you still can't help your skin by moisturizing. Moisturizing is for everyone even if they don't have dry skin. I conducted this experiment to find which moisturizer of my chosen ones would keep skin the most moist. In this experiment I used small dishes with JELLO to model human skin. This is because the JELLO contains Collagen, a tissue that is present in animal and human skin. My first step was to make the JELLO and pour it into petri dishes. Then I added 2 tablespoons of moisturizer to each of the dishes, leaving 3 dishes as controls. I then graphed the weight of each dish every day for 2 weeks while graphing the height every other day for 2 weeks. After 2 weeks, I looked at the data. In the lead was the moisturizer with the Ceramides, with Glycerin and Shea butter close behind. They formed barriers and left skin plump and soft. My results may have been slightly off because the JELLO models work differently from real skin, but the results were not unscientific. I learned that good moisturizers add a strong barrier to the skin and keeps it soft. In conclusion, I learned about different characteristics of moisturizers and what ingredients work better for the skin.

2013 PAEMST Awardee

Congratulations to Janet Wagner from Bon Homme School, on being selected as South Dakota's awardee for the Presidential Award for Excellence in Mathematics and Science Teaching. This prestigious award recognizes her contributions as both a teacher and a leader in mathematics education in South Dakta. Awardees have been shown to devote more time to professional development, to incorporate innovative approaches into their classroom teaching, and to reflect upon their teaching practices in order to impact student learning. Outstanding!! Janet Wagner and Lindsey Brewer (math recipient) will be celebrating their time in Washington, DC with the 2013 class of Presidential Awardees sometime soon.

2014-15 nominations/selections are being processed. Nominations are now closed for the next cycle. BUT look for nominations for mathematics and science teachers of grades K-6 to open in Fall of 2015.

Continue your education as a Coyote!

University of South Dakota School of Education

Undergraduate Teaching Majors

K–8	Elementary Education
7–12	Biology, Chemistry, Earth Science, English, History, Mathematics, Physics, Political Science, Speech Communication, Theatre
K–12	Art, French, German, Music, Physical Education, Spanish, Special Education*

*Double Major: The Special Education major must be paired with Elementary Education or a 7–12/K–12 teaching major.

Undergraduate Non-Teaching Majors

Kinesiology and Sport Science
(Exercise Science or Sport Management Specialization)

http://admissions.usd.edu

Curriculum and Instruction

M.A.	Elementary Education, Technology, Secondary Education, Special Education
Ed.S., Ed.D.	Curriculum and Instruction

Counseling and Psychology in Education

M.A., Ed.S, Ph.D.	Human Development and Educational Psychology
M.A., Ed.S, Ph.D.	Counseling
Ed.S., Ph.D.	School Psychology

Educational Administration

M.A., Ed.S., Ed.D.	PK–12 Principal, Director of Curriculum, School District Superintendent
Ed.S, Ed.D.	Director of Special Education
M.A., Ed.D.	Adult and High Education

Kinesiology and Sport Science

M.A.	Kinesiology and Sport Science

(Exercise Science or Sport Management Specialization)

www.usd.edu/grad

UNIVERSITY OF SOUTH DAKOTA

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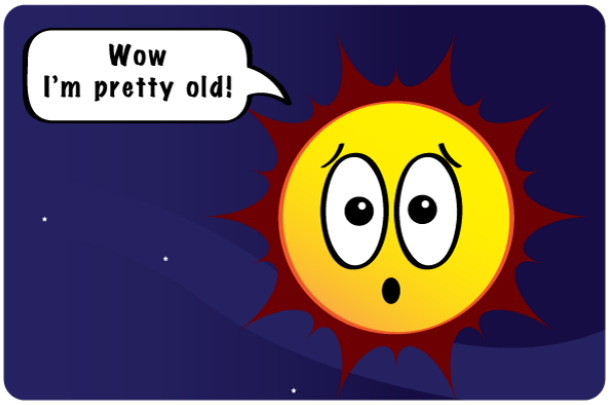
How old is the sun?

Is it really old? Or not so much?

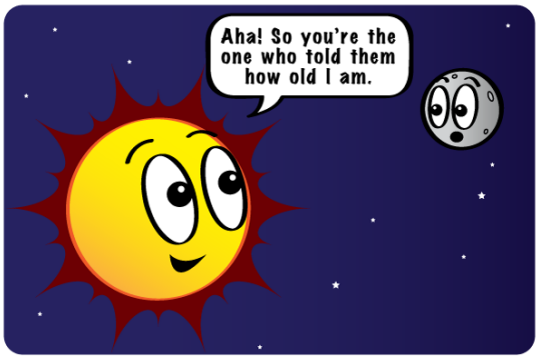
Our sun is 4,500,000 years old. That's a lot of zeroes. That's four and a half *billion*.



How We Know the Sun's Age

How do we know how old it is? We look at the age of the whole solar system, because it all came together around the same time.

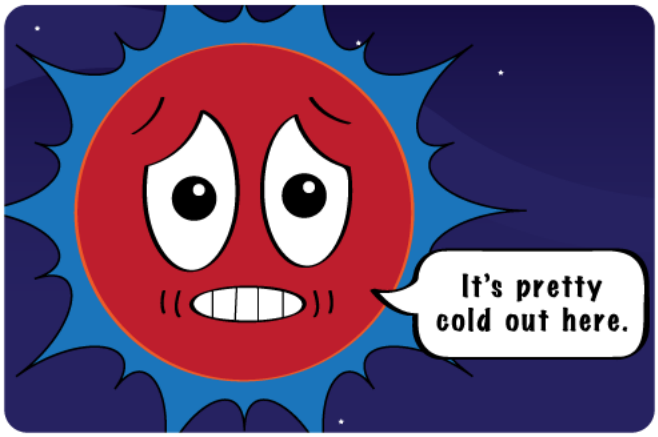
To get this number, we look for the oldest things we can find. Moon rocks work well for this. When astronauts brought them back for scientists to study them, they were able to find out how old they are.



How Long Will the Sun Shine?

If our sun is four and a half billion years old, how much longer will it shine? Stars like our sun burn for about nine or 10 billion years. So our sun is about halfway through its life. But don't worry. It still has about 5,000,000,000—five billion—years to go.

When those five billion years are up, the sun will become a **red giant**. That means the sun will get bigger and cooler at the same time. When that happens, it won't be the bright yellow shining sun we know today. It will be dimmer and appear red.



NASA's Space Place is an NASA educational website about space, technology, and Earth sciences. It targets upper-elementary-aged children.

http://spaceplace.nasa.gov/

NSTA has issued its Call-for-Entries for the 2015–2016 Awards Program

The annual NSTA Awards and Recognition Program recognizes exceptional and innovative science educators created in 1973. The NSTA Awards and Recognition were created to raise awareness and exposure of the outstanding work being done in the science education field.

All entries must be received by 11:59 PM EST on 11/30/2015, via online submission with the exception of the Shell Science Teaching Award whose deadline is 11/18/2015. Entry fees are free.

A distinguished panel of professional science educators will gather in Washington, DC, the weekend of 1/16/2016 to select the winners from an anticipated 500 entries. To be eligible for consideration, all work must be current and cumulative as applicable.

The NSTA Awards and Recognition recipients will be honored during a black-tie dinner gala on 4/1/2016 in Nashville, Tennessee, at the NSTA National Conference on Science Education.

The NSTA Awards and Recognition Program is sponsored in part by Bio-Rad, DuPont/Pioneer, Northrop Grumman Foundation, PASCO, SeaWorld Parks and Entertainment, TruGreen, Shell, Vernier Software & Technology. Sponsorships for the NSTA Awards help support the science educators and their science educational programs, professional development, and proactive efforts in the science education field.

For more information or to complete an NSTA Awards entry, use this link to go to NSTA's website:

It's All About Science is the name of the festival held the second Saturday every June and hosted by Sanford Research in Sioux Falls, but the festival could have many titles. It's All About Fun...It's All About Exploring…It's All About Discovery….It's All About Learning… Thousands of visitors; a good number of them kids, make their way to the Sanford Center to spend the day exploring the world of science. The visitors might get to build a penny bridge, watch The Dancing Scientist stage show, eat a spicy bowl of jambalaya, "speed date" with a real scientist, enter to win prizes, purchase a science T-shirt, learn about research from students and adults at the poster competition, build a marble roller coaster, become a pilot at the flight simulator, make snow in June, and the list goes on. All of this happens to promote science and allow visitors to truly experience science and all the fun and excitement that goes along with it.

Besides being a great event for the whole family to enjoy together, the It's All About Science Festival is a fantastic venue for your students to showcase their learning. There is a special student/classroom competition where kids can demonstrate and display their projects and experiences from their own classrooms. Students are able to speak to an authentic audience about their learning through the school year. Educators understand that kids have truly mastered a concept when they can teach others about it and the festival provides a perfect opportunity to make that happen. There are travel stipends available to schools coming from a distance, prize money for participating, and lunch is served to students for free onsite. Although the festival is complete for 2015, it's not too early to start planning for next summer. If you have questions about entering student work to be displayed at a booth or in a scientific poster competition, please contact Mari Biehl at mari.biehl@k12.sd.us.

If you would like a little advance warning, the *It's All About Science Festival* will be **June 12, 2016**.
Hope to see you and your students there!
http://www.ItsAllAboutScience.org/

Volume 137 - Summer 2015

South Dakota Science Teachers' Association

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SD Science Teacher's Association Logo

From time-to-time, I have been asked when the SDSTA logo was created and is there any symbolism that is contained therein. To see that original logo, watch for the SDSTA banner that is usually on display at the Science & Math conference that is held in Huron each February. It is similar to the one at left except that the text is above and below the outline of the state of SD.

A little over twenty years ago, in about 1994, Colleen Schuft created the design/banner. Since our organization was for those interested in science in SD, the first obvious choice was to have the outline of the state of SD. To say science, the objects used were: an apple to say discovery & learning; an atom for the physical sciences; the DNA helix for the biological sciences; and the hands to convey the hands-on nature of science in which cooperation creates a climate of exchange of knowledge—that exchange may take place between students/teachers; teachers/parents; eastern SD/western SD; or even Biological Sciences/Physical Sciences.

For her efforts, Colleen received $10 and a free membership. Thank you for your work, Colleen.!.!.!

The SDSTA Newsletter is published four times a year. The Summer issue (this one) is emailed to 120 paid members, and several school science departments. The Membership year in SDSTA starts with the February conference and ends the first of February. Dues are due at each conference for member discount rates. SDSTA members may give a one year free membership to their student teachers by submitting the student teacher's name & address. One paid conference registration may be given to the SDSTA member that has made a submission to the newsletter (or given a presentation at the conference) and has referred at least three new members. Members may also earn a 10% finders fee for any science related ads placed in the newsletter. Our rates are $50 per page (or 3 to 4 quarter pages)

Mail to: Deirdre Peck, SDSTA Treas
409 S. Kline Street
Aberdeen, SD 57401

$ 5 Student
$ 5 K - 6
$ 5 Retired
$20 All Others

Name _____ **Home Phone** ____-_____
Home Address _____ **E-mail:** _____
City _____ **State** _____ **Zip** _____
Your School _____ **School Phone** ____-_____
School Address _____
City _____ **State** _____ **Zip** _____
Your area K - 6 7 - 8 9 - 12 College Other_____
(circle one)
Referred by_____

South Dakota Science Teachers' Association
Julie Olson and James Stearns
Editors, S D S T A Newsletter
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Groton, SD 57445-2024

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Delivered at the speed of light.

A little of the activity from Sanford's It's all About Science festival in June 2015



Calendar of Events

Fall 2015 PAEMST.org site opens for nominations of K-6 teachers
August/September Watch for announcement of SDSTA Business meeting via DDN
November 17 Sanford PROMISE Science Discovery Day for sophomores & juniors
November 30 Deadline for entry into most NSTA Award programs
December 3-5 NSTA Area Conference in Kansas City: Raising the Stakes in Science
January 2016 Deadline to enter the SD—AAPT photo contest

February 4-6, 2016 24th Annual Joint Math & Science Conference - Huron, SD

March 31–April 3, 2016 NSTA National Conference in Nashville, Tennessee
July 27–30, 2016 NSTA STEM Forum & Expo, Denver, Colorado

HomePage located at http://SDSTA.org