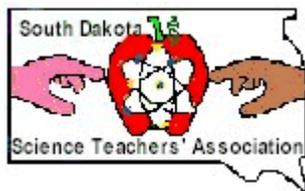


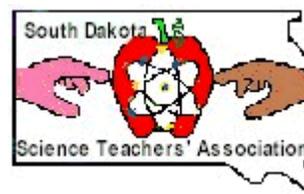
South Dakota Science Teachers' Association



Spring 2016

April 2016

Volume 140



President's Letter—Elizabeth McMillan

It was so great to see many of you in Huron in early February! Although spring has been far from “typical” I’m looking forward to the flowers and green that comes with our April showers.

I absolutely loved connecting with many of you at the conference, always wishing there was more time. It seems we found the future plan for our Thursday night sharing session – Pizza! The hotel is going through some transition and I was amazed at how the staff at the Crossroads was able to handle the abrupt closing of the restaurant (which you should know was scheduled to cater all of our meals). Shout out to Jean for getting all of that figured out without a lot of us knowing about it.

Past President Julie presented the Distinguished Service Award to Past-Past President Brenda Murphey with the secret help of David Ireland who got her from Rapid to Huron under some additional pretexts (she thought she was surprising Jen Fowler, MS Liaison, with her attendance in recognition of her Presidential Award Nomination) – turns out they both got a great surprise. The Friend of Science Award was announced to 3M,

Larry Browning and I are still setting up our appointment to officially deliver it to Brookings 3M. If you have recommendations for future award winners please don’t hesitate to touch base with me.

Sam Kean was a great highlight, I always enjoy hearing his interpretation of science. I’ve had several evaluations from students and teachers since regarding Sam’s newest book: *The Dueling Neurosurgeons*. If anyone uses his texts for class, we’d love a newsletter article on how that’s worked for you!

Sad to report that I was unable to attend this year’s NSTA Conference in Nashville. I have heard great things about the event and kept up with things on Twitter. Consider following NSTA on twitter, they have some great ed chat opportunities if you enjoy full function of “the Twitter”. Past Presidents Ramona Lundberg and Julie Olson attended as well as several other officers and members. We look forward to potential emails or newsletter articles about their experiences. In July NSTA will host their STEM Forum and Expo in Denver and in October the Regional Conference will be held in Minneapolis. Would be great to

have a good SD showing, especially at the MN event. Please let us know if you plan to attend and we can try to meet up!

Systems Science seems to be all around us: new standards, interesting weather patterns, spring growth, and more. I hope that this newsletter finds you all well in your classrooms as you approach the final stretch of the 15-16 school year. There are dozens of regional opportunities throughout the summer for professional development and collaboration – several are listed here in the newsletter, others will be shared through the membership list or the DOEScience listserv. If you are not already signed up with DOEScience, please visit your k12.sd.us portal, select “K-12 mailing lists” in the upper left corner and follow the directions to subscribe to your favorite lists.

Hope to bump into you at some of the amazing things that happen in SDJ!

Sincerely,

~LIZ

SDSTA President 2016-2018

SDSTA Convention Awards



Awards for Excellence in Math and Science SD State Finalists:

- Marie Gillespie—Pierre Indian Learning Center
- Jennifer Fowler—Rapid City Schools
- Lisa Cardillo—Harrisburg High School
- Luanne Lindskov—Timberlake High School

Physical Science Teacher of the Year = Janet Wagner—BonHomme School District pictured with Dr. Larry Browning, SDSU . The award is sponsored by



Daniel Swets Robotics Materials Award— Hilary Risner (left— pictured with Thomas Durkin from the South Dakota Space Grant Consortium) 4H SDSU Extension

Jacoby Hinton (right) McLaughlin High School



SDSTA Distinguished Service Award (below): Brenda Murphy (Rapid City Schools) pictured with Jennifer Fowler (Rapid City Schools)



Kelly Lane Earth and Space Science Grant (right): Tricia Neugebauer (Mitchell CTE), Thomas Durkin, and Marie Gillespie (Pierre Indian Learning Center)



Sam Keen—Banquet speaker and author



President Elect Mark Iverson, President Liz McMillan and Past President Julie Olson (above).



What does it take for a person to win the Presidential Award for Excellence in Math and Science teaching?

Submitted by Janet Wagner

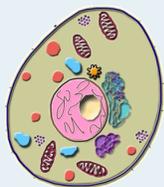
What does a person who has won the Presidential Award for Excellence in Math and Science teaching look like? If we would look at the most recent winners they would appear quite the opposite of one another. One is tall and one is short, one is new school and one is old school, one is young and one is old, one has taught some years and one has taught many years, one is west river and one is east river and the list could go on.

But there are just as many things that they have in common, love of teaching, love of learning, desire to help the student advance, attend more workshops, continue professional development, both are blonde, care and concern for the students, willing to put the time in and the list could go on.

← The message is simple ANYONE is capable of winning the Presidential award. All you need to do is tell the world the wonderful things you do in your classroom every day.

The Great Organelle Debate

How many of us have either given students the list of organelles and their functions? This is followed by a matching exercise on a test or quiz to assess knowledge. Do they really know or did they just memorize? A better way is to carry out an Organelle Debate!



Write the names of the different organelles on popsicle sticks and have students draw. They are to find at least 5

selling points as to why their assigned organelle is the most important. The next day, they share their points of view and information with the rest of the class. The students must write down this information in either chart or bullet format. They then write their own opinion on which organelle is the most important and why citing evidence (at least 5 or more reasons). Their evidence must include why other organelles are inferior.

They must choose an organelle and it doesn't have to be the one they originally drew. I also include 5 points for grammar, neatness, and citations for resources.

Using Soap Bubbles to Model Membranes...and incorporate the Practices and Cross Cutting Standards from the Standards

An excellent way to study the cell membrane as well as cover several of the Science and Engineering Practices can be accomplished by using soap bubbles and manipulating them in ways to simulate how real membranes work/act. Students study the bubbles on a macroscopic level then use these actions to explain how membranes work on a microscopic/chemical level (CCC: scale and proportion). There are several labs that can be found online. This one From Jeremy Conn founder of Clear Biology <http://www.clearbiology.com/wp-content/uploads/2014/10/Cell-Membrane-Bubble-Lab.pdf> does a good job at taking students through the fluid nature of membranes as well as the concepts of pores and even the endosymbiotic theory. It needs a little "tweaking" to more purposefully incorporate the Science and Engineering Practices.

Of the numerous labs found on the internet, I chose the one at <http://nnhsbiology.pbworks.com/w/page/12388762/cell%20membranes>. I felt this one covered a broader range of the properties of cell membranes: fluidity, flexibility, channels, membrane healing, endocytosis/exocytosis, cell division, prokaryote/eukaryote, cell fusion, and cell packing. I did give the students a link of the molecular level of both soap and cell membranes (use the first link given).

Practices:

Asking Questions—Students ask questions like "why are our cells so durable (not pop as easily)", "Do our cells pack the same way?"

Plan and Carry Out Experiments: Trying to put different objects through a cell membrane (Does size matter?) (What are the rules for passing things through a cell/soap bubble?)

Using Models to gather data: Using the soap bubbles to model a cell membrane.

Constructing Explanations: Why cells and soap act alike as well as different.

Developing arguments from evidence: Backing up what they say with what they saw/experienced.

Using Models to communicate: Drawing analogies between the model and real cells. They can look at tissues under the microscope to see if rules about cell packing are the same? Information about membrane bound organelles and how they got that way. Cell division/cytokinesis, endosymbiosis, exo/endocytosis are all topics that can be brought into this conversation.

Cross-cutting concepts:

Patterns: How are the arrangements of the molecules alike and different between soap/cell membranes?

Cause and Effect: What happens when we blow a bubble from a film? Does it self seal? What happens to a bubble inside a bubble? What effect does packing have on cells/bubbles?

Scale, proportion, and quantity: Can how bubbles/cells act on a large level be explained by their molecular level?

Energy and matter: Do bubbles and cells have the same fluidity? What is the purpose of this?

Stability and Change: What accounts for the stability of real cells compared to soap bubbles?

BioPharmaceutical Technology Center—PD Opportunity!

Teacher Courses

We will be offering 2 one-week teacher courses, Biotechnology: The Basics June 27- July 1, 2016; and Biotechnology: Beyond the Basics July 11-15, 2016, at the BTC Institute in Fitchburg (Madison), WI. There will be no course fee and stipends will be available for those who qualify. Optional graduate education credits will be available, if paid for by the participant, from Viterbo University and Edgewood College. Registration and more information can be found at: <http://www.btc.org/k12/bta/twc/twc.html>

From one of last year's participants: "This past week has been very enlightening and fun. After 35 years of attending teacher/educator conferences and workshops, few have been as useful as this week was. Being able to have the hands on experience of completing some basic labs helps me validate what I teach about biotech. My confidence on approaching our science department to develop interdepartmental units on biotech is improved because I was able to use the equipment and complete the labs. My lab skills were very primitive and I was apprehensive about being able to complete the labs. Your instructions and helpful teaching tips for teaching students made it easy to learn. The wealth of information you provided and the sharing with the other instructors has given me a lot of ideas on how I can incorporate more biotech in each of my classes...Thank you for a wonderful week!"

Teacher Institute for Evolutionary Science

The Teacher Institute for Evolutionary Science is a non-profit project whose goal is to help middle school science teachers effectively teach their state's Evolution and Natural Selection standards. We are always looking for presenters who are knowledgeable and passionate on the subject. We work with our presenters (teachers, college professors, scientists) to organize and schedule professional development opportunities in their local school districts or state conferences (all travel expenses covered). We provide all of the materials and a \$150 stipend per workshop.

Learn more about TIES on our webpage:
<https://richarddawkins.net/ties/>

Or on our online learning page: <https://richarddawkins.net/ties/online-learning/>

Both pages have a link for interested educators to join our TIES Teacher Corps.



World Population Video Resource Update

A long-popular resource, *World Population*, a short video-animation of the history of world population of the past 2,000 years. A new version of *World Population* is now part of a new website, WorldPopulationHistory.org that has a number of interactive features and rich content to help students learn more about human ecology – past, present and projected – including land use, carbon emissions and trends in science and technology that have shaped society. We designed the site with high school students and teachers in mind.

See this [press release](#) for more information on the website's features.

Sanford Underground Research Facility—PD Opportunity

The Education and Outreach team at Sanford Underground Research Facility has developed hands-on curriculum units for use in your classroom. Two units have been developed for each of three grade bands. All units connect to the science and engineering taking place at Sanford Lab.

Elementary (3-5)

Exploring the Unseen

May the Force Be With You

Middle School (6-8)

What's the 'Matter' with the Big Bang

Monster Waves

High School (9-12)

Perplexing Puddles

'We are All Made of Star-Stuff'

prioritize the units based on which ones you are most interested in teaching in your classroom. You will explore the science and engineering of the units from a unique perspective, strengthening your content knowledge and helping you connect your students to the cutting-edge science of Sanford Lab.

More details

<http://www.sanfordlab.org/education/integrating-sanford-lab-science-workshop>



During this weeklong workshop, teachers will have an opportunity to work through two of the curriculum units. Applicants are asked to

Spring Fling Field Investigation Teacher Workshop

Fort Peck Hatchery, Fort Peck, MT

April 23-24

This hands-on Project WILD training is designed to provide science educators with instructional tools and resources to assist them in teaching students about conducting fish and wildlife field work.. Participants will assist FWP hatchery employees with a day of walleye egg-take spawning efforts on Fort Peck Lake and will participate in conducting grouse lek counts. Workshop education materials: Field Investigations handbooks:

http://www.fishwildlife.org/files/ConEd-2015-Revision-Field_Investigations_.pdf

http://www.fishwildlife.org/files/Technology_for_Field_Investigations-_CE_Strategy.pdf

Sage grouse viewing guidelines <http://fwp.mt.gov/fwpDoc.html?id=71750>

If you have any questions, please contact Marc Kloker with the contact information below. We hope to see you there!

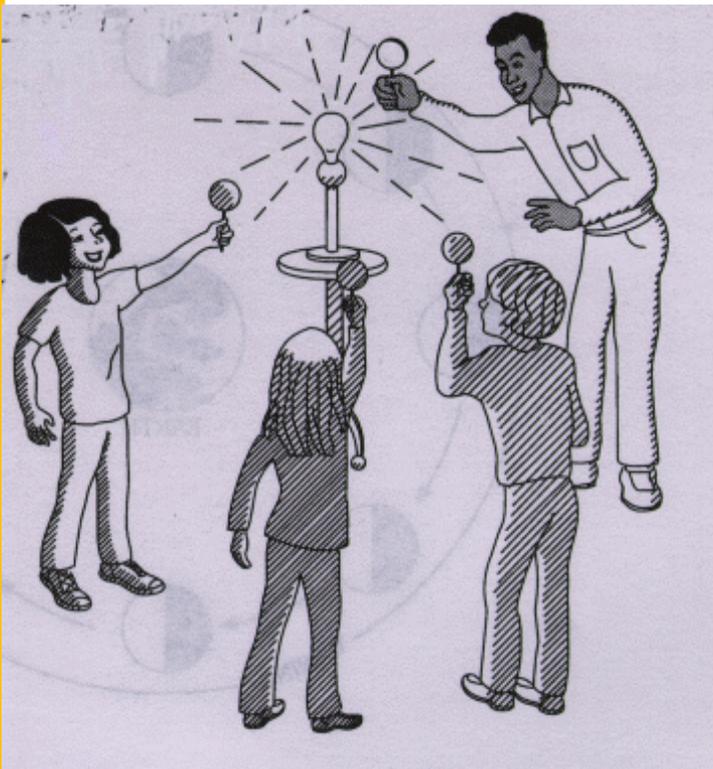
Marc Kloker, Information & Education Program Manager, MT Fish, Wildlife & Parks Region 6

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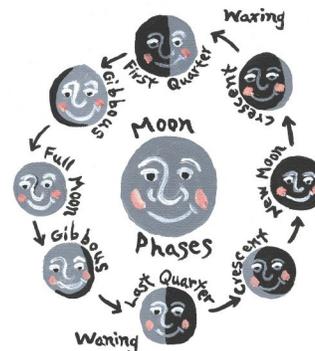
Getting Lunar in the Classroom —submitted by Jennifer Fowler

When you are getting Totally Lunar in your classroom, visit the Star Date website. <http://stardate.org/nightsky/moon> Not only is there a lunar calculator to discover phases through time, but there is a month calendar that showing daily phases to assist your students with understanding. With a calendar in one hand and a styrofoam ball on a stick, representing the moon, in the other hand, your students can recreate lunar phases. Their head represents Earth and a lightbulb in the center of the room is the sun allowing for a visual model of the sun-earth-moon system.



This month's moon phases and calculator for any day since 1951 | StarDate Online stardate.org Why does the Moon have phases?

<http://stardate.org/nightsky/moon>



PhET

<https://phet.colorado.edu/>

Submitted by Lindsay Kortan

PhET offers interactive science and math simulations that cover a wide range of topics. Each simulation often has multiple resources including worksheets and lesson ideas that have been submitted by other PhET users that you can download to use or edit. Simulations can be explored by browsing a content area and grade level or by searching a specific science or math concept.

The “Build an Atom” simulation can be used as an introduction to atomic structure by having students complete a guided exploration of the simulation. By doing so, the students discover what effect changing the numbers of protons, neutrons, and electrons has on an atom. It introduces all the subatomic particles, charge, mass number, and atomic number. After the simulation, students can then play games within the simulation to test their understanding.

Other recommended simulations:

- States of Matter
- Energy Skate Park
- Balancing Chemical Equations
- Projectile Motion
- Isotopes and Atomic Mass
- Molecule Shapes
- Vector Addition
- Forces and Motion



ARTsome Astronomy

CREATE A BEAUTIFUL PIECE OF ART WHILE LEARNING THE GEOLOGIC STORY OF CELESTIAL OBJECTS.

Rocket through the solar system through the lens of an artist! Fuse science, technology and art to understand the geologic story of our celestial neighbors: planets, comets and asteroids. What do these images tell us? Using the elements and design principles of art, learn how to:

- Engage students in space science education by becoming artist explorers.
- Fuse art, science and technology to inspire students to explore all three disciplines.
- Explore the development of viewing objects in space from the naked eye to remote sensing technology.
- Create art inspired by planet and celestial images from remote sensing technology.
- Deepen understanding of planet and other rocky celestial surfaces when observing them through an artist’s lens.
- Analyze the mysterious surfaces of our rocky celestial neighbors, make sense of what one sees, hone observation skills and inspire questions.

Science inspiring art – Art empowering science!

LOCATION DATE TIME

ARTsome Astronomy I.....Yankton High School.....June 6-7, 2016.....8:30-5:00

ARTsome Astronomy II.....Yankton High School.....June 8-9, 2016.....8:30-5:00

ARTsome Astronomy I..... Sturgis Williams Middle School.....June 13-14, 2016.....8:30-5:00

Fee: \$100 (Includes materials and resources) • Register at SteckelbergConsulting.com

One Graduate Credit Hour Available (\$45), University of Sioux Falls

DeVee Dietz:email: devee.dietz@k12.sd.us call: 605-661-7743

Marie Steckelberg: mail: marie@steckelbergconsulting.com call: 605-660-2369

Universe in a Nutshell—summer astronomy workshop at DWU

Dakota Wesleyan University will hold a three day astronomy workshop for K-12 teachers from July 11-13. The “Universe in Nutshell” workshop will instruct teachers in the basics of astronomy, give teachers demonstration materials to bring back to their classroom and inform teachers about planetarium demonstrations that can be brought back to their school. If weather permits, teachers will be able to view the morning/evening skies through one of DWU’s many telescopes.

Workshop participants will earn two non-degree granting graduate credits. The workshop is limited to 24 teachers and is contingent upon DWU receiving a grant to fund the workshop with an anticipated approval date of May 1, 2016. The cost for the workshop is only \$25 which includes materials, food and (if necessary) housing. The deadline to register is May 31, 2016. For more information or to register, please go to www.dwu.edu/planetarium or contact Dr. Joan Lubben at jolubben@dwu.edu or 995-2672.

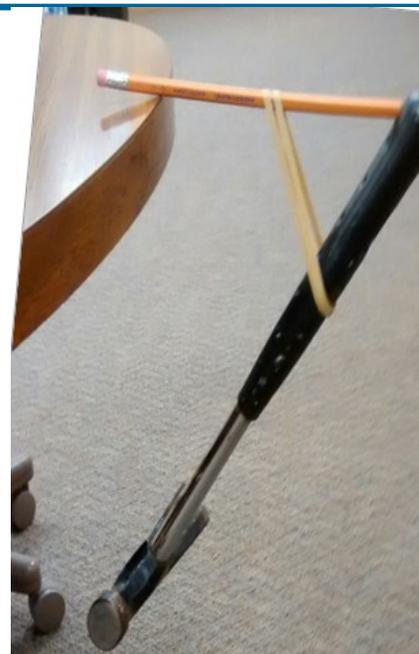


Golden Eagle Flight

This picture is of a golden eagle preparing to take flight. The eagle prepares to flap its wings in a wave-like motion to produce flight. There are three concepts of physics that go into flight. The first is thrust. The bird must produce motion to begin lift-off. Being a bird of such a large mass, it must flap its wings more than once to achieve this. Lift is the second force of a flying object and is only applied once the object is in the air. This is an opposing force, causing the bird to fall back to earth, once it stops flapping its wings. The third and final force is drag, which is caused by natural friction of an object rubbing against another object, such as this bird and the wind. This photo was taken on the 22nd of September, 2015 and, to me, was an extremely rare and lucky photo that I was able to take.

SD AAPT Photo Contest

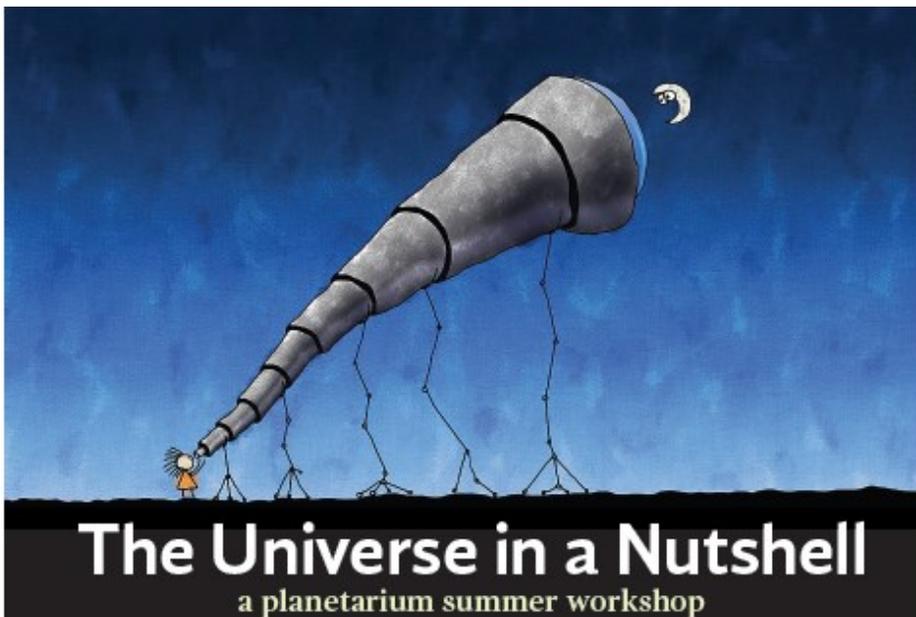
February 5, 2016, Huron, SD
For the past several years, the SD branch of the American Association of Physics Teachers has held a photo contest at the Science & Math Conference. Both of this years winners are shown. To compete, the students must submit both a photo and a description of the science in that photo. Winning entries are chosen by the appearance of the picture and how well the science is described by the student.



Gravity support

I will explain the science of how a pencil can hold up a one kilogram hammer. It is all about the center of gravity. To set this demonstration up, you will need a hammer, a pencil, and a rubber band. First, take the rubber band and wrap it around the hammer. Then, put the pencil under the rubber band and notch it in the hammer. Next, put the pencil onto the table and the hammer under the table. You will see the pencil balancing the hammer.

When it balances, you will see that the pencil is holding up the hammer. This is because of where gravity is pulling the structure at. With the hammer head being under the table, the hammer is pulling the pencil down on the eraser end of the pencil instead of the other end that is touching the hammer. With most of the weight under the pencil eraser, the structure is unable to be pulled downward by gravity as the table is holding it up.



Join us for a three-day astronomy workshop as we explore our universe from the sun to the distant galaxies. Learn about DWU's new* traveling planetarium and create demonstrations that you can use in your classroom. If weather permits, we will have nighttime telescope viewing.

WHEN: Monday, July 11, 2016 through Wednesday, July 13, 2016

WHO: For K-12 teachers; earn two nondegree graduate credits offered by DWU

WHERE: Dakota Wesleyan University campus

PROFESSORS: Dr. Mike Farney and Dr. Joan Lubben

DETAILS:

- *Workshop is pending grant approval (anticipated approval date is May 1, 2016).
- Workshop begins at 1 p.m. on Monday, July 11 and ends at 3 p.m. on Wednesday, July 13.
- Food and campus housing are included.
- A \$25 registration fee is due by May 30; includes graduate credit, housing, food and instruction.

WORKSHOP OVERVIEW:

Monday, July 11 • 1-9 p.m.

Teachers will participate in a “planet walk,” view photographs of the surface of Mars through 3-D glasses, and see how the gaseous planets maintain their distinctive, swirling bands.

Tuesday, July 12 • 9 a.m.-9 p.m.

We will explain how stars are born in nebulas, what makes them live, and how they sometimes die in great cosmic explosions.

Wednesday, July 13 • 9 a.m.-3 p.m.

Teachers will learn the standard model of the universe and the reasoning behind it.

At the close of the workshop, teachers will return to their schools with:

- a supernova demonstrator;
- a star finder;
- an illustrated book on how to conduct a planet walk;
- a classroom set of 3D glasses for viewing NASA photos;
- a flask and cork to model the bands of Jupiter;
- red, blue and white Photon Lights;
- a handheld spectroscope and also the knowledge of how to build one;
- a solar viewer;
- constellations knowledge cards; and
- website links to where a set of three dimensional paper planets can be found.

The Sanford PROMISE

Spring Science Discovery Day 2016

Would your students be interested in learning more about biomedical careers available within our region? Do they often have questions about what science skills are required to perform a certain job or what college degrees might be needed?

We invite high school sophomores and juniors with a genuine interest in the sciences to join us for Science Discovery Day. Attendees will get exposure to hands-on techniques and skills utilized by regional science professions. This program includes career presentations, hands-on activities, and exhibits from area industries and universities. Attendees will receive lunch and a Sanford PROMISE T-shirt.

Presenters include professionals from Sanford Research and other area biomedical industry and academic institutions. We will accept the first 200 registered students.

Tuesday, April 19th 8:00am-2:00pm Sanford Center in Sioux Falls, SD
To register, please complete survey: https://www.surveymonkey.com/r/Spring2016_SDD

Note: Schools are required to provide one adult chaperone (teacher, counselor, administrator, parent, etc.) for every 20 students. For questions, please contact Sanford Outreach at

SanfordOutreach@sanfordhealth.org or 605-312-6590

Check us out on the web at www.sanfordresearch.org/education



Green Chemistry and Sustainable Energy Education for Teachers

July 10 – 15, 2016 South Dakota School of Mines and Technology

The professional development workshop “Green Chemistry and Sustainable Energy Education 2016” is structured as an active learning environment that will empower teachers to bring chemistry and engineering alive to students, stressing the satisfaction with compelling questions and the joy of discovery.

The workshop will be held at the Department of Chemistry and Applied Biological Sciences, South Dakota School of Mines and Technology July 10-15, 2016.

The workshop is open to science teacher in public or private schools in South Dakota. Registration for the workshop is open until May 1 or until filled. Space is limited, so we urge you to apply now.

Professional Development Objectives:

Provide knowledge of Green Chemistry and Sustainable Energy to educators in an active learning environment using practices, crosscutting concepts, and Physical Sciences; Earth and Space Sciences; and Engineering, Technology, and Applications of Science Disciplinary Core Ideas.

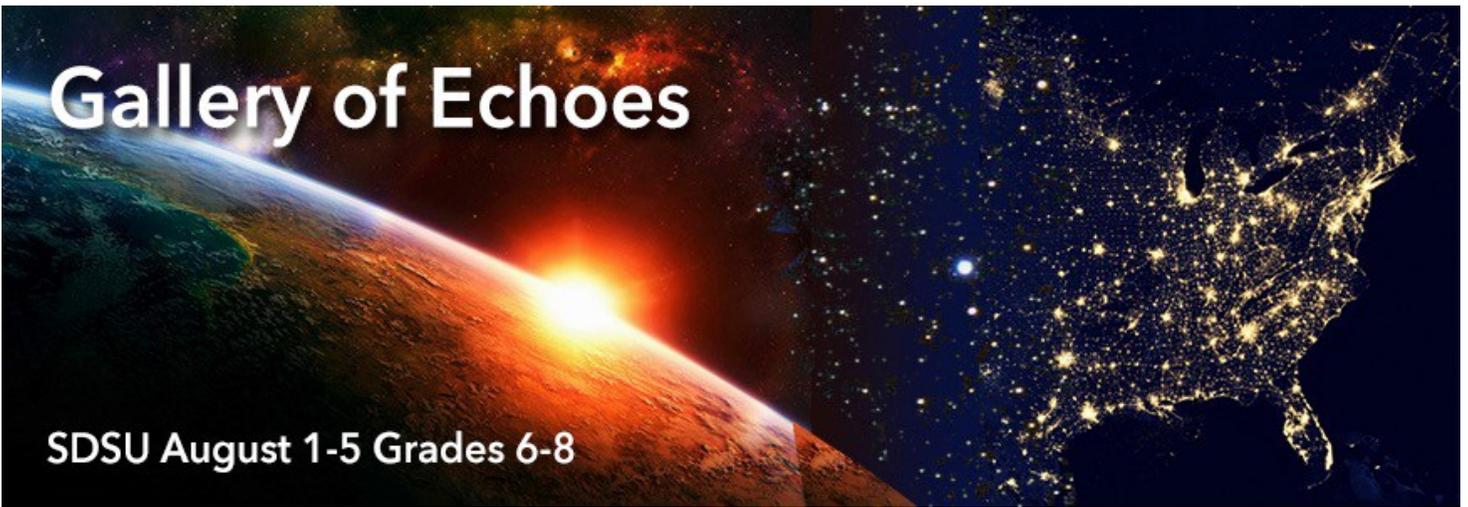
Train and increase educators’ capacity to effectively incorporate fundamental and safe Green Chemistry and Sustainable Energy learning activities into their curricula.

Implement learning activities to enable teaching of Green Chemistry and Sustainable Energy concepts within a culturally appropriate framework relevant to Native American students and in accordance with Oceti Sakowin Essential Understandings and Standards. Support teachers in development and integration of Students Learning Objectives (SLO).

The teachers participated in the workshop will receive a \$100 a day stipend, lodging and meals will be provided to teachers during the workshop. Graduate credit from Black Hills State University towards Teaching Certification for the participants will be available at \$80 for a 2-hour course.

This Professional Development program sponsored by a No Child Left Behind grant from the South Dakota Board of Regents is the first collaborative effort between SDSMT and focused on Green Chemistry and Sustainable energy.

For more information & how to apply contact Dr. Tsvetanka Filipova at Tsvetanka.Filipova@sdsmt.edu or (605) 390-0759



NASA/LATI sponsored-Summer Bridge Program on SDSU campus

Where Art Meets Science and Serious Gaming Meets Flight

Available Scholarships! 30 Student Scholarships 15 Teacher Scholarships

For more information: www.pastinnovationlab.org





NASA Space Place

Educator Newsletter

NEWS AND NOTES FOR FORMAL AND INFORMAL EDUCATORS

Space Place is a NASA website for elementary school-aged kids, their teachers, and their parents.

It's colorful! It's dynamic! It's fun! It's rich with science, technology, engineering, and math content! It's informal. It's meaty. It's easy to read and understand. It's also in Spanish. And it's free!

It has over 150 separate modules for kids, including hands-on projects, interactive games, animated cartoons, and amazing facts about space and Earth science and

NASA Space Place has a new look! We've now made our content more accessible – check it out here: www.spaceplace.nasa.gov. To keep up with all the latest, follow us on Facebook and Twitter @nasaspaceplace. If you'd like to be added to our e-newsletter, email us at info@spaceplace.nasa.gov.

New! What is the Kuiper Belt?

Explore what else is out there past Neptune! The Kuiper Belt, a ring of icy bodies where you'll find dwarf planet Pluto and other interesting objects like Eris and Haumea, is still a mysterious place. The New Horizons spacecraft will continue to explore this belt in the near future!

<http://spaceplace.nasa.gov/kuiper-belt/>



New! Stretchy Universe Slime

Our universe has been stretching out in all directions ever since it began about 13.8 billion years ago, which can be seen through telescopes! In fact, the

farthest galaxies are actually moving faster than those near us. Make your own stretchy universe slime and hold the universe in the palm of your hand! <http://spaceplace.nasa.gov/universe-slime/>



Out-of-School Time

Are you stuck inside because of bad weather, or are you simply staying home for



the weekend? Why not try some of our make-and-do activities! Here is one of our favorites: Earth Fan - Did you know that there is a lot going on beneath the surface of Earth? We pretty much spend all our time on Earth's crust, but if you dig deeper you'll find the mantle, the outer core and the inner core. Learn more about Earth's layers by making an Earth fan!

<http://spaceplace.nasa.gov/earth-fan/>

April 11 – Apollo 13, the third mission intended to land on the moon, was launched on this day in 1970.

April 22 – Happy Earth Day!

<http://spaceplace.nasa.gov/atmosphere/>



Secure Programming Logic Summer Course for High School Girls

The Computer and Information Sciences Department at Towson University is offering an **online** programming logic course (COSC 175) in summer 2016 geared to high school girls. Students will receive 4 college credits (COSC175) upon successful completion. This course is free to qualified high school girls. To apply and for more information, visit: www.towson.edu/splash.

Judy Vondruska

Astronomy/Physics Instructor
South Dakota State University
ALD Advisor
President – SD Chapter of AAPT
Box 2222, SDEA 263
Brookings, SD 57007
Phone: 605-688-5859
Fax: 605 688 5878

Engineering Design for Physical Science

The Framework guiding the development of the Next Generation Science Standards (NGSS) identifies eight science and engineering principles essential for all students to learn. This project will focus on helping 8-9th grade physical science teachers better understand those principles and how to incorporate them into their physical science classroom in conjunction with the new SD Science Standards. Each day of the week-long workshop, teachers will participate in a variety of engineering-related activities, have access to high-end instrumentation, take tours of engineering-related facilities in the region and develop lesson plans to incorporate what they have learned into their science classroom. Up to 3 hours of graduate credit is available in physics.

For additional information, contact
Judy Vondruska
judy.vondruska@sdstate.edu

+ More Extraordinary Transformations

Motivate, Engage, & Challenge EVERY student!

In this make-and-take session, we will share more strategies and methods to transform ordinary worksheets into engaging activities and games. Participants will be given examples, instructions, templates, and time to create their own versions that will be classroom-ready, such as:

Find Someone Who; The Great Debate; Divide & Conquer; More Money; Selfies; Process Strips; Tile Time; Rotation Stations; Brain Rush; *Survivor*

Location – Date & Registration Link

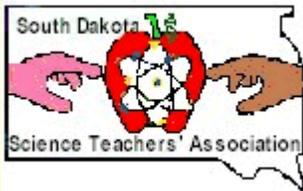
Roscoe July 19th <http://goo.gl/forms/BDE81i4imq>

Platte July 26th <http://midcentral-coop.org/registrations/moreextraordinary/>

Huron Aug 2nd <http://goo.gl/forms/zphF3JINUW>

USF Graduate Credit Available!

Any questions may be sent to Lindsey.Brewer@k12.sd.us Lori.Keleher@k12.sd.us



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National Stem Cell Foundation Scholars Program

An all-expenses-paid professional development opportunity for 10 select teachers

The SDSTA Newsletter is published four times a year. The April issue (this one) is e-mailed to 130 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% finder's fee for any science related ads placed in the newsletter. Our rates are \$50 per page (or 3 to 4 quarter pages)

Seeking middle school science teachers who enjoy the creativity in teaching, are eager to share ideas with colleagues, & are excited about networking with peers from across the U.S.

Through a grant from the National Stem Cell Foundation, The Center for Gifted Studies at Western Kentucky University is pleased to offer the NSCF Scholars Program. Ten middle school science teachers will spend June 5 - 11 at Western Kentucky University in Bowling Green, Kentucky, where they will engage in hands-on and minds-on science activities, connect with speakers and thought leaders in STEM education, learn with skilled science educators, and develop a creative Challenge Project for classroom implementation. Each scholar will receive a Chromebook and funding for Challenge Project supplies & materials.

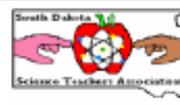
All expenses, including travel costs, materials, mentoring and Challenge Project supplies will be covered by a grant from the National Stem Cell Foundation.

Application Deadline April 15

Learn more & apply

wku.edu/gifted/nscf

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 _____

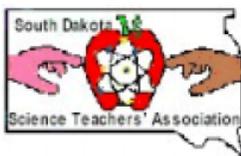
Your area K - 6 7 - 8 9 - 12 College Other _____

(circle one)

Referred by _____

South Dakota Science Teachers' Association

Julie Olson and James Stearns
Editors, S D S T A Newsletter
15 North Fifth Street
Groton, SD 57445-2024



Delivered at the speed of science!



ADDRESS SERVICE REQUESTED



If you are interested in purchasing a Science shirt or sweater, there are a limited amount available.

(Apparel that is currently available can to shipped to you for)

(\$25 eachor save \$5 if you stop by to pick it up.)

Brown Hooded Sweaters: 3-Med, 2-Large & 2 X-Large

TerraCotta Shirts: 1-Med, 3-Large & 2—2X-Large

Blue Shirts: Ladies XL, Ladies XX, 1-Small, 4-XL & 1—2XL

Green Shirt: 2XL

Red Polo: 4 - Medium and 2 - Large

Dark Red Polo: 2 - X-Large

Black Polo: 1 - 2XL

and one black computer bag & one green bag

(and baseball style caps are \$10)

639 – Physical Science Concepts for Teachers – Summer 2016 Course

Deep Understanding of Science Content for Teachers - 2016-2019 Program

Black Hills State University is offering a *Physical Science Concepts for Teachers* workshop this summer from June 19-24, 2016 for South Dakota science educators in grades 6-12. The workshop will emphasize essential physical science concepts outlined in *A Framework for K-12 Science Education* and the new *South Dakota Science Standards*. Topics include chemical reactions, energy in chemical processes and everyday life, and ways energy is transferred and transformed in both microscopic and macroscopic processes. Elementary teachers are welcome if their participation helps bridge science teaching between schools. The workshop will be supported by a recently funded Title II, Part A grant through the South Dakota Board of Regents.

The proposed schedule for the workshop (subject to revision):

- Sunday, 6-19 – Evening Session – Orientation, Pre-Assessment, Check into Apartments
- Monday, 6-20 – Properties and structure of atoms
- Tuesday, 6-21 – Energy transfers and transformations related to molecular configurations
- Wednesday, 6-22 – Laws of thermodynamics at molecular and macro scale; conservation of energy
- Thursday, 6-23 – Stored chemical (bond energy) at microscopic and macroscopic scales
- Friday, 6-24 – Morning Only – Reflection and Synthesis of Science Concepts, Post-Assessment

Facilitators:

- Dr. Andy Johnson, School of Natural Sciences, BHSU
- Dr. Janet Briggs, Center for the Advancement of Math and Science Education, BHSU

Teachers will receive the following:

- Stipend of \$500 for attending the week-long workshop
- Lodging in apartments at BHSU (air-conditioned 2-bedroom apartments, 2 participants per apartment) and meals on campus

Graduate Credit:

Two hours of graduate credit will be available at a reduced rate of \$80 through BHSU. The paperwork for registering for credit will be emailed at a later date.

Three Year Program:

The Physical Science course is the first in a series in the **Deep Understanding of Science Concepts** for Teachers

Program, a proposed three-year program providing South Dakota science teachers with rigorous science experiences and a platform to collaboratively assess and reflect on student learning. Three summer institutes are planned: Physical Science in 2016, Earth and Space Science in 2017, and Life Science in 2018 (contingent on subsequent funding). Coursework throughout the school year from 2016-19 will focus on translating theories of teaching and learning into practice based on the *Framework*, the *South Dakota Science Standards* and the *South Dakota Student Learning Objectives Handbook*. Participants will work collaboratively to improve science teaching and learning by writing and assessing Student Learning Objectives to enhance student scientific thinking processes. They will participate in two face-to-face meetings and extensive online discussions using available technology per semester.

Expectations:

Teachers selected for the summer workshop are expected to continue with the science courses offered in the program. An attached Plan of Study outlines the sequence of science classes (bottom section of the sheet) as well as courses in the Masters in Curriculum and Instruction (MSCI). The science courses take 3 years to complete, while the MSCI is a 2-year program, so teachers can start taking the science coursework this summer and enter the master's program in 2017 if they wish.

Registration and Notification Process:

Complete the attached **Letter of Intent** and return it to janet.briggs@bhsu.edu by April 20, 2016.

Contact Janet Briggs at janet.briggs@bhsu.edu if you have any questions.

Janet L. Briggs, EdD
Science Education Specialist
NGSS@NSTA Curator – Weather and Climate
Center for the Advancement of Math and Science Ed. (CAMSE)
Wenona Cook #103
Black Hills State University
1200 University, Unit 9005
Spearfish, SD 57799-9005
Phone: 605-642-6875
Janet.briggs@bhsu.edu

“Scientific discovery consists of seeing what everyone else has seen, but thinking what no one else has thought.” – **Albert Szent-Györgyi de Nagyrápolt**, Nobel Prize in Physiology or Medicine in 1937.

ED 639 Physical Science Concepts for Teachers Workshop
BLACK HILLS STATE UNIVERSITY
June 19-24, 2016

LETTER OF INTENT

Please place a checkmark in front of the statements below indicating your intentions for the workshop.

	I intend to participate in the Physical Science Content for K-12 Teachers
	I live more than 60 miles from Spearfish, SD and will need housing on the
	I am pursuing or I am interested in pursuing the Science Specialist Endorse-

Fill out the information below.

Name	
School District	
Mailing Address	
Telephone Number(s)	
Grade Level(s) For 2016-17 School Year	
Subject Area(s) for 2016-17 School Year	
E-mail Address(es)	
Today's Date	
	<input type="checkbox"/> Male <input type="checkbox"/> Female
For lodging, you will need to	

Return via e-mail to Janet Briggs at Janet.Briggs@bhsu.edu by April 20, 2016.