



SDSTA

South Dakota Science Teachers Association

Summer Issue | Date: June 7, 2018

NSHSS STEAM GRANT

NSHSS is pleased to announce the inclusion of Arts in our recently-opened [STEM Grant](#) for high school educators. The Society will award five \$1000 grants help enhance STEAM-related activities, innovation, and classroom excellence for teachers in any science, technology, engineering, arts or mathematics classes. With the addition of Arts to the opportunity, we are extending the deadline to June 30, 2018.

Funds may be used for supplies, materials, field trips or other resources to enhance the delivery of STEAM-related courses.

The application is available on the NSHSS website. If you are already registered as an Educator with NSHSS or have applied online for an NSHSS educator grant previously, log in to your dashboard to apply for this grant. Otherwise, to apply, register as an official NSHSS recognized educator.

NSHSS website
<https://www.nshss.org/educators/grants/>



SD DISCOVERY CENTER

The South Dakota Discovery Center SD-Discovery.org is a great resource for PD. A great workshop to check out is *Made by Teachers for Teachers: Education Portal - Connecting Research to the Classroom* which is designed to connect scientific research happening in South Dakota to our classrooms. Teachers worked with researchers last summer to build curriculum units that meet SD science standards and build connections to real-life science. This free workshop will introduce you to the portal and how to use it. One graduate credit is also available.

To register, go to:
<https://sd-discovery.org/event-2811924>

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Again, it is okay to relax for a few days this summer (you've certainly earned it!). However, if you do stumble across more interesting PD opportunities, please share them with your fellow science teachers!

You can join the [DOEScience listserv](#),
or just share them on twitter with
@SDSTA and the hashtag #sdsci.

Have a great summer!



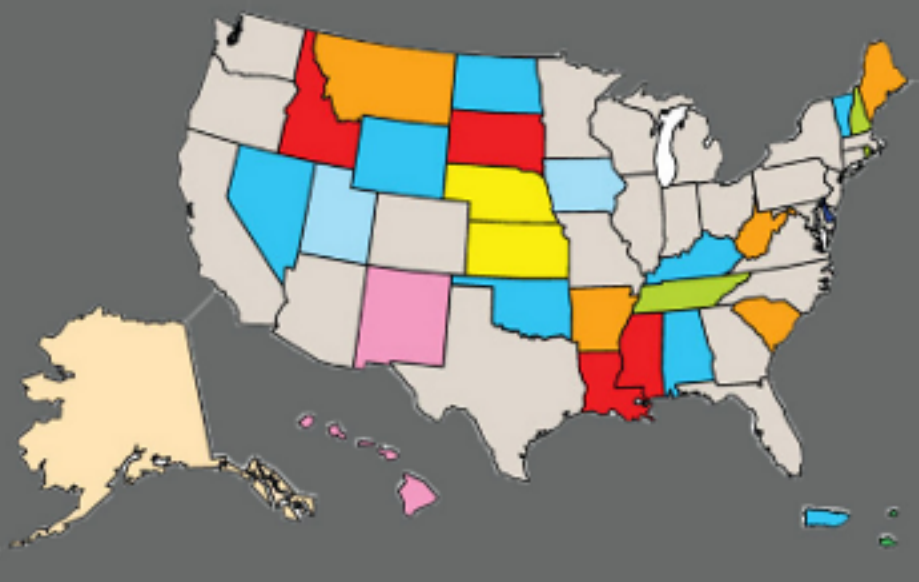
The South Dakota Established Program to Stimulate Competitive Research

ABOUT SD EPSCOR

The National Science Foundation (NSF) created the first Experimental Program to Stimulate Competitive Research (EPSCoR) program in 1980. Its success led congress to expand the program and since 1990 create EPSCoR-like programs in several federal agencies, including: USDA, NIH, DoD, DoE, NASA and EPA.

Now named the Established Program to Stimulate Competitive Research, EPSCoR identifies develops, and uses a state's academic science and technology resources to support its economic growth and promote a more productive and fulfilling way of life for its citizens. EPSCoR acts on the premise that universities, their science and engineering faculty, and their students are valuable resources that can influence a state's development in the 21st century. To achieve this goal, NSF provides lasting improvements to the state's academic research infrastructure that increase its national research and development competitiveness.

EPSCoR States & Jurisdictions:



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flickr.com/sdepscor



Free Family Fun!
June 9
9 a.m.–4:30 p.m.
Sanford Research Center

The festival is a free event and includes:

- Onstage performances by [SDPB's Science Steve](#) and [Bubbleology](#)
- Over [40 activity booths](#) from local organizations the whole family can enjoy

THE SANFORD PROMISE

Program for the Midwest Initiative in Science Exploration

Educator Enrichment Professional Development Workshop
Biomedical Techniques: GENETIC ORIGINS

You are invited to join Sanford PROMISE and special guest Dave Mangus, 2016 Massachusetts STEM Teacher of the Year, for a FREE workshop designed to inform educators in the current practices and techniques utilized in biomedical sciences and the opportunity to connect with regional experts in biomedical sciences. (A digital follow-up session will be scheduled for August 2018).



July 23rd 10AM – 4:30PM

Sanford Center
2301 E 60TH St North
Sioux Falls, SD

July 24th 8:15AM – 4:30PM

Lunch Provided

Register at: <https://www.surveymonkey.com/r/2018EdEnrich>

Participants will have access to all equipment and supplies needed to conduct the activities in YOUR OWN classroom during the 2018/2019 school year through the Sanford PROMISE Equipment Lending Library. You will also receive over \$100 worth of classroom materials!!

LEARN HOW PERFORM DNA ELECTROPHORESIS

SEND YOUR DNA FOR GENETIC SEQUENCING

PERFORM BASIC BIOINFORMATICS

CONTACT US:
SanfordOutreach@SanfordHealth.org • 605-312-6590



ELL WORKSHOP

Who: teachers working with English Learners, both in content classrooms & ESL programs

What: This co-teaching & collaboration workshop equips educators with tools for creating successful collaborative relationships. Participants will develop co-teaching models, gain planning strategies, & walk away ready to sidestep common roadblocks.

When:

- August 8th in Huron from 9:00am - 4:00pm
- August 9th in Sioux Falls from 9:00am - 4:00pm

Register:

<https://sdtitle3migrant.org/workshops-2/>

Questions:

Jean.Larson@k12.sd.us or
Gwyneth.witte@k12.sd.us

Credit Option: Option for 2 graduate credits through USF available. Information will be shared with registered participants

TIE WORKSHOPS

Starting in June 2018 and ending in 2019, TIE has planned a year's worth of one-day workshops to help districts develop their customized Computer Science roadmap. Try out the options in these hands-on workshops which will introduce participants to several computer science and robotics opportunities listed below. For exact details and to register, click [here](#) or visit <http://tie.net/code>

Workshop 1: June 2018 Overview of Coding and Coding extensions like Ozobot, Sphero and more!

Workshop 2: June 2018 & October 2018 Makey-Makey

Workshop 3: February 2019 Microbit and Raspberry Pi

Workshop 4: March 2019 Minecraft & augmented and virtual reality (AR/VR)

Workshop 5: June 2018 and ongoing throughout the school year K-5 Computer Science Fundamentals

WSD SUMMER ACADEMY 2018

WATERTOWN

June 18 - 22 AND July 30 - August 3

<http://wtacademy2018.weebly.com/>

The Watertown School District welcomes you to participate in the 2018 Summer Academy. They will host two learning weeks, June 18-22 and July 30-August 3. There will be a mix of curriculum and technology sessions each week. You are welcome to mix and match sessions between the two weeks. This summer's sessions will be held on the campus of Lake Area Technical Institute.

Cost for participants from other school districts will be charged \$10 per Summer Academy session, with a maximum charge of \$100 total for unlimited sessions during the two weeks. Payment can be made at the Academy. If you need information about purchase orders or district payment, or would like to inquire about group discounts, please contact Tricia.Walker@k12.sd.us. USF credits will cost an additional \$45 each, payable to USF. CEUs are available at no cost.

One exciting component that is new: on August 1st, the Watertown School District will host an EdCamp day as part of their Academy. This day is FREE for all!

Mitchell Teacher Technology Academy

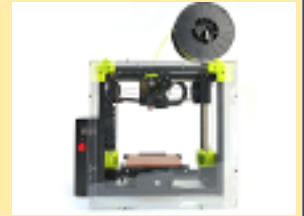
June 26-27. We want you! Would you like to learn more technology skills and earn credit? Slidedeck, Google Classroom, Techtools, SeeSaw, 3D printing, If you are interested, please register on the link below and read about the details of the sessions on the attachment to this email. Thank you in advance to our colleagues that are willing to share their knowledge with all of us!

Teacher Technology Academy Registration Form:

<https://goo.gl/forms/DKr9HYVXe2smssho1>

Questions: email becky.roth@k12.sd.us

Please be registered by June 8th!



TEACHING USING GEO-INQUIRY

FREE 2-DAY TEACHER TRAINING

Attendees will receive:

- National Geographic's Geo-Inquiry Training
- Phase 1 Geo-Educator Program Training
- A tour of the museum's exhibit, 'Weathering the Storm: Nature's Impact on South Dakota'.

July 20-21, 2018 from 9:00am-2:00pm

South Dakota Agricultural Heritage Museum, Brookings, SD

<http://www.agmuseumstore.com/category-s/127.htm>

- FREE: with lunch provided
- 1 CEU Credit: available for \$15
- Contact: Jessica.Burke@sdstate.edu

Modeling Workshops

Modeling Workshops™ are hosted in physics (mechanics, E&M, waves), chemistry (first and second semester), biology, physical science, middle school science, and a few one-week long Intro to Modeling sessions:

<http://bit.ly/AMTA2018workshops> . Physics Modeling Workshops™: Alabama, Arizona, California, Florida, Illinois, Maine, Massachusetts, Michigan, Minnesota, New York, North Carolina, and Texas

Chemistry Modeling Workshops™: Arizona, California, Illinois, Indiana, Maine, Massachusetts, Michigan, Minnesota, New York, Ohio, and Texas,

Biology Modeling Workshops™: Arizona, Florida, Illinois, Maine, Massachusetts, Michigan, Minnesota, New York, North Carolina, and Texas,

Middle school/Physical Science Modeling Workshops™: Illinois, Michigan and North Carolina

NSTA RESOURCES

NGSS On-line Book Study

NSTA knows it can be challenging to learn the complex ins and outs of the NGSS on your own. That's why we developed a [four-week online book Study](#) around *Discover the NGSS: Primer and Unit Planner*, to provide science teachers with a comprehensive introduction to the NGSS.

The Biology Corner

Created by St. Louis educator Shannan Muskopf, this website for high school biology teachers and students is chock full of lessons, quizzes, labs, web quests, and other teacher-tested classroom resources for use in introductory life science to advanced placement biology courses. The resources are organized by subject—e.g., anatomy, cell biology, evolution, genetics, ecology, and science methods; within each topic there are a range of materials from simple coloring worksheets that reinforce basic understandings to case studies and investigations that spark deeper learning. All of the resources feature targeted grade levels, standards correlations, and estimated time needed to complete the learning experience.

<https://www.biologycorner.com/>

VALENCE BOARD GAME

Have you ever had a good idea for a game where kids can learn science? [Lab Out Loud's](#) guest this week has, and he made those ideas a reality! Nathan Schreiber joins co-hosts Brian Bartel and Dale Basler this week to talk about his Science Ninjas games that teach real science with engaging graphics, fun characters, and easy-to-follow instructions. [Listen](#) to learn how you might teach with Valence, a game that combines advanced chemistry with simple rules and ninjas!



MONTANA STATE PD

Montana State University's online graduate courses for science teachers are now open for Summer 2018 registration. Summer 2018 courses include 14 offerings in Earth science, education, physics, land resources and environmental science, math, microbiology and environmental science as well as non-credit options on Arduino and LEGO robotics. National Teachers Enhancement Network (NTEN) courses start in May and June, and credits may be used toward a 12-credit online graduate certificate in one of five disciplines or may even apply toward an online master's degree. Visit <http://eu.montana.edu/nten/courses> or follow NTEN on Facebook at www.facebook.com/scienceteachers

Instructables Education

Instructables has a ton of awesome projects for your classroom, and supports teachers and students by providing free [Premium Memberships](#). We provide plug and play hands-on projects to let you supplement your curriculum with the best projects we have to offer. You don't need to be a traditional classroom teacher to participate, either. Anyone whose job is explicitly educational, you are invited to participate. You will be able to download pdf's for free for projects.

Sign up for a free Premium Membership and get started today!
[Sign Up for Free Premium »](#)



South Dakota Discovery Center

Your hands-on science playground

GLOBE in the Field

Date: June 18-22

Location: SD Discovery Center and 3 field days.

Fee: \$50 registration fee. Credit extra.

Credit: 2

Register: [GLOBE in the Field](#)

Explore Badlands National Park through science and story telling for educators Grade 4-12. We will spend one day in class at the SD Discovery Center and three in the field at Sage Creek Primitive Campground exploring the park through field studies and citizen science, engaging with park education staff, and developing a story of our expedition. This opportunity will include a digital storytelling component and Phase 1 of National Geographic Certified Educator training.

Discover a Watershed

Date: August 1-2, 2018

Location: Brookings, Dakota Nature Park

Fee: \$25. Credit extra

Register: [Discover a Watershed](#)

Explore the Missouri River Watershed in this two day workshop using resources from Project WET, National Geographic, and GLOBE.

Targeted to Grade 4 - 8 educators, this hands-on workshop will equip you to do inquiry based field explorations with your students.

We will do a "deep dive" into watershed investigations with learning that addresses 5th, 6th, and 7th grade science and social studies standards including water quality field studies, story mapping, and more!

SD OBTA - Angela Wachal

2018 SD Outstanding Biology Teacher is Angela Wachal from Harrisburg High School. Mrs. Wachal currently teaches Project Lead the Way Human Body Systems and Medical Interventions as well as Dual Credit Bio-105 Survey of Anatomy and Physiology. She is a 2017 Sanford PROMISE Ambassador and supervising teacher for the USD Education Department. Angela received the award based on many things such as her ability to reach all students through a variety of teaching methods and use of materials as well as making learning "fun" says a fellow science teacher. "She is willing to learn from others" as evidenced by her participation in the Sanford Educator Research Fellowship and ongoing research still. Angela was also one of the founders for the Harrisburg HOSA (Health Occupations Student Organization) which has qualified many students for the national competition. Angela will receive a travel grant provided by Sanford Health to help with expenses to attend the National Association of Biology Teachers convention in San Diego, CA in the fall.



Julie Olson (SD OBTA Chair), Eli Louwagie (Sanford Research), Tricia Larsen (Sanford Research), Angela Wachal (2018 SD OBTA), and Dr. Peter Vitiello (Sanford Research)

What Is the Asteroid Belt? By Linda Hermans-Killiam

There are millions of pieces of rocky material left over from the formation of our solar system. These rocky chunks are called asteroids, and they can be found orbiting our Sun. Most asteroids are found between the orbits of Mars and Jupiter. They orbit the Sun in a doughnut-shaped region of space called the asteroid belt.

Asteroids come in many different sizes—from tiny rocks to giant boulders. Some can even be hundreds of miles across! Asteroids are mostly rocky, but some also have metals inside, such as iron and nickel. Almost all asteroids have irregular shapes. However, very large asteroids can have a rounder shape.

The asteroid belt is about as wide as the distance between Earth and the Sun. It's a big space, so the objects in the asteroid belt aren't very close together. That means there is plenty of room for spacecraft to safely pass through the belt. In fact, NASA has already sent several spacecraft through the asteroid belt!

The total mass of objects in the asteroid belt is only about 4 percent the mass of our Moon. Half of this mass is from the four largest objects in the belt. These objects are named Ceres, Vesta, Pallas and Hygiea.

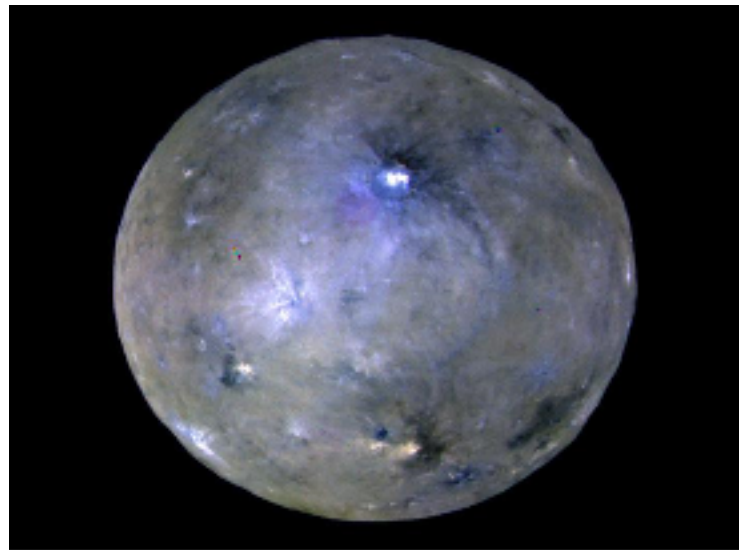
The dwarf planet Ceres is the largest object in the asteroid belt. However, Ceres is still pretty small. It is only about 587 miles across—only a quarter the diameter of Earth's moon. In 2015, NASA's Dawn mission mapped the surface of Ceres. From Dawn, we learned that the outermost layer of Ceres—

called the crust—is made up of a mixture of rock and ice.

The Dawn spacecraft also visited the asteroid Vesta. Vesta is the second largest object in the asteroid belt. It is 329 miles across, and it is the brightest asteroid in the sky. Vesta is covered with light and dark patches, and lava once flowed on its surface.

The asteroid belt is filled with objects from the dawn of our solar system. Asteroids represent the building blocks of planets and moons, and studying them helps us learn about the early solar system.

For more information about asteroids, visit: <https://spaceplace.nasa.gov/asteroid>



This image captured by the Dawn spacecraft is an enhanced color view of Ceres, the largest object in the asteroid belt. Credit: NASA/JPL-Caltech/UCLA/MPS/DLR/IDA

*This article is provided by **NASA Space Place**. With articles, activities, crafts, games, and lesson plans, NASA Space Place encourages everyone to get excited about science and technology. Visit **spaceplace.nasa.gov** to explore space and Earth science!*

Winning Science Fair Abstracts

Each year, SDSTA supports the regional science fairs with monetary awards to 1 middle school winner from each of the regional fairs.

Out of This World

Kelsey Whalen - Spearfish Classical Christian School

The purpose of this experiment is to determine if the drastic atmospheric conditions in space will have an effect on the elasticity of rubber bands. X-ray dental films to detect cosmic rays, and twenty-two rubber bands were mailed to JP Aerospace in California and then flown into space. The same amount of rubber bands were left on Earth to use as a control. The elasticity of the rubber bands were tested by a device suspended off of an indoor balcony. The contraption included a bucket suspended by strings, carabiners and rubber bands. A minimum standard weight was determined and added to the bucket which was suspended by the rubber band, followed by additional pennies until the rubber band broke. A tub was placed under the bucket to collect the bucket and any stray pennies. The pennies were then weighed in a gram scale. The overall average of the total weight needed to break the rubber bands on Earth was 5304.7 grams and the overall average of the rubber bands sent into space was 5335.1 grams. It appears that the rubber bands that went into space were more elastic but they are so similar that one can't conclude that one is more stretchy than the other, especially since their individual weights varied so greatly. No cosmic rays were seen on the x-rays but are known to exist. Practical applications include studies done in very cold climates that include rubber located in Antarctica or in outer space.

Do Essential Oils Kill Mold?

Reese Powers - Avon Middle School

Mold is a part of the natural environment and can be harmful when it is indoors. They can become harmful because of mycotoxins. These sit on the spores of the mold. The spores of the mold can spread very quickly, even by just a little breeze. In this experiment, I tried to see if essential oils could kill mold. To do this I took bread and let it mold. Next I put mold in petri dishes and treated some with on guard, purify, copaiba, and cinnamon bark. The other ones I put pure coconut oil to prove that the mold didn't just die because there was an oil barrier around it. Finally I has plates with no oil as a control group to see how fast on average the mold grows.

In my hypothesis I believed that if essential oils affect mold growth and I add essential oil to bread mold the amount of mold will decrease. There were two oils that killed the mold. These were on guard and cinnamon bark. I led to the conclusion that they were dead because the mold appeared to shrivel up and turn black. However the other treatments had a fuzziness to the mold and kept growing with spotting around the oil rings.

I hope this project will help people to kill mold in indoor places more naturally instead of using harmful chemicals to kill them.

Using Natural Dyes in Solar Cells to Maximize Voltage

Dustin Hermansen - Aberdeen

Fossil energy plays a huge role in our everyday life from turning on your faucet to driving your car to work everyday. We can do this by burning fossil fuels like coal, natural gas, oil, and many more. These resources won't be around for much longer. That's why scientists are trying to find other ways to try to make energy. They have tried many kinds, such as hydrology, wind energy, and nuclear power but they all have their pros and cons. There is one way that can work to create electricity and it is called solar cells. Solar cells make energy when the sun's rays hit electronics that are in silicon cells using photons of light from the sun. This project uses natural dyes to make the biggest charge.



What we're doing this summer...

Liz McMillan - Past President It is in late May, early June, that I wonder why I ever left the classroom. Gearing up for summer is the most crazy time for me anymore. In early June (this weekend) we host the It's All About Science Festival at Sanford Research – hope to see some of you here! I'm excited that SDSTA will be hosting a get together this summer (more info to come). When possible, I love attending the SDSU-REMAST annual meeting as they always have the coolest speakers. In addition to student workshops and students in research, a curriculum writing workshop with SD EPSCoR, research poster sessions, and other summer fun - Sanford Research will also host several teacher PD's that I'm excited about (and some still have space) – we are doing a focus group with elementary teachers, a genetic origins workshop (mitochondrial DNA and human relationships!), and a genetics and ethics workshop with pged.org. If you're interested in any of these do contact me (liz@sdsta.org), we'll see what we can do to get you in. I've seen a lot of options come through the DOEScience listserv so make sure you're signed up (visit k12.sd.us and choose the listserv option in the upper left hand corner for directions). Happy Summer 2018! (or really still spring but you know what I mean.)

Jennifer Fowler - President Elect - Hello Summertime!!! We as science teachers are always looking for new and fun adventures whether it is traveling to new areas or taking classes. I have decided to have an action packed summer that certainly will fly by!

First, I will begin studying for my Education Doctorate through University of South Dakota. This has been a goal of mine for a while and I am looking forward to the possibilities. The application process alone was a valuable experience for reflection on my professional experiences, previous education, and future plans. I suggest that if you are feeling like you need a challenge, check into a higher degree for yourself.

Another adventure I have is to escort five of my students to Space Academy in Huntsville, Alabama for the week long camp. Our middle school has a benefactor that pays for five students to attend Space Academy and four students to attend Air Camp in Dayton, Ohio each year. Last summer, I was able to participate with our students in the Air Camp experience and it was one of the most action packed opportunities I have been a part of. Check out these links if you have students that may be interested in attending on their own, or through fundraising. Air Camp: <https://aircampusa.com/> Space Camp: <https://www.spacecamp.com/> You may even have a benefactor in your town that may be willing to sponsor students.

Birding is my favorite hobby, really an obsessed passion, and aside from surveys here in South Dakota, I also travel for birds, and Northern California and Southern Arizona are on my list this summer. I am very close to having close to 600 life birds in the American Birding Association Area and hope that these trips will have me reach my goal. Locally, you can discover new species for yourself and perhaps keep a life list for South Dakota, a particular county, natural area, or your back yard! I would love to help you identify a bird in pictures or answer questions about locations, habitat, etc.

Jennifer.Fowler@k12.sd.us Check the South Dakota Ornithologists Union website, www.SDOU.org, for checklists, locations for hot spots, and so much more! Use this SD Breeding Bird Atlas link <https://gfp.sd.gov/breeding-bird-atlas/> for bird species accounts and block information regarding the breeding birds in our state. We spent five summers collecting the data that are now represented in the interactive website. I created an Educator's Guide that correlates with the Atlas website that will soon be available online, and I can send it to you upon request until then.

Enjoy your summer recharge and I hope that you take time to learn new things about the world around you! Science Rocks! We've got things to do!

Tiffany Kroeger - Secretary - I will be brushing up on my physics knowledge by taking two college physics courses in order to teach physics and conceptual physics next school year. My summer will also be punctuated with the Summer Academy for Mentoring, the REMAST conference and the Identity, Genetics and History workshop put on by Sanford Research.

Julie Olson - Newsletter - I will be traveling to Japan June 19th for two weeks as part of the Fulbright-Japan ESD program. We will experience the culture (even a home stay) and get to collaborate with Japanese teachers on Sustainability projects. I've already been inspired to start several projects on my own such as planting a school garden in the community plot, planning a hydroponics set up with the culinary and building trades teachers, and growing tea plants! In July, I will travel to Atlanta to participate in teacher professional development at the CDC. We will collaborate with researchers there on public health. In my spare time, I hope to get my dissertation proposal done so I can finish my EdD in Curriculum and Instruction.

Michelle Bartels - Newsletter - I traveled (17th time I think) to Washington, DC and New York City with 8th grade students. In Washington, DC we toured our Nation's Capitol, saw the White House, visited Smithsonians, and visited as many memorials as time permitted. In New York City, we traveled to the top of One World Observatory (102 floors), went by ferry to the Statue of Liberty and Ellis Island, walked through Central Park, and saw the Broadway Show, Wicked.

In July, I will participate in the 2018 National Geographic Society Geo-Inquiry Summer Institute at the Jackson Campus of the Teton Science Schools in Jackson, Wyoming. National Geographic will train me to be a trainer in the Geo-Inquiry Process. This process is designed to empower middle school educators and students to use geographic thinking and geospatial tools to solve complex real world problems.

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Upcoming Events

June 9	It's All About Science Festival Sanford Research Center—Sioux Falls
June 18-22	GLOBE in the Field SD Discovery Center
June 18-22	Watertown Summer Academy Lake Area Technical Institute Campus
June 26-27	Teacher Technology Academy Mitchell
July 11-13	7th Annual STEM Forum Expo (NSTA) Philadelphia, PA
July 20-21	Teaching Using Geo-Inquiry Brookings, SD
July 30-August 3	Watertown Summer Academy Lake Area Technical Institute Campus
August 1-2	Connecting Research to the Classroom SD Discovery Center
August 1-2	Discover a Watershed Brookings, Dakota Nature Park
February 7-8 & 9, 2019	SD STEM Ed Conference Huron, SD

The SDSTA Newsletter is published four times a year. The June issue (this one) is e-mailed to 95 paid members and several school science departments. The Membership year in SDSTA starts with the February conference and ends the thirty-first of January. 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).



Become a Member!

\$5 Student, K-6, Retired **\$20** All Others

Name _____ Home Phone _____

Home Address _____ E-mail _____

City _____ State _____ Zip _____

Your School _____ School Phone _____

School Address _____

Your area (circle one) K-6 7-8 9-12 College Other _____

Referred by _____

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