



SDSTA

South Dakota Science Teachers Association

Fall Issue | September 27, 2020

Dear Members,

I love starting a new school year, especially this year after being out of the classroom for six months. It has been wonderful seeing everyone in person instead of on a screen. I know this year is not the same as others but that is what makes teaching so interesting. Each year is a new beginning with a chance to become better than I was the previous year, and this year is no exception. I don't know about you, but I feel rushed to get in as many labs as I can, just in case we go virtual again.

As of right now, we do plan to have the SD STEM Ed Conference in February so we need presenters! Please consider being a presenter. If you do not want to present alone, an officer would love to co-present with you! The proposals are due October 31st. Registration for the conference will open in November with new team pricing. The details for this discount, as well as other information about the conference and the link to the session proposal, can be found on page 5. On page 9, Ally provides information on the two scholarships available that pay for the conference registration. Also, one paid conference registration may be given to an SDSTA member that has made a submission to the newsletter (or given a presentation at the

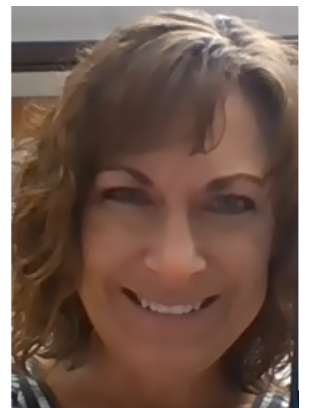
conference) and has referred at least three new members.

The newsletter is loaded with information, opportunities, and classroom resources. Your thoughts and ideas are welcome, so if there is something more or different you would like to see in the newsletter, let Julie Olson or I know. We will do our best to make the newsletter enjoyable and useful to you. If you would like to submit something to be included in the December newsletter, please email the information to Julie.Olson@k12.sd.us by December 15th. We look forward to hearing from you!

Continue being resilient in our fight to educate by making our students feel safe, making learning fun, and keeping our relationships with our students strong.

Thank you for all you do in providing a quality education for each of your students!

Michelle Bartels
SDSTA President



Hello, science friends!

Happy autumnal equinox! Happy fall bird migration! The study of phenology is important to note the natural changes around us and we can cling to these observations when we are looking for some “normalcy” in our lives. We can offer our students the chances to explore as well while using the Science and Engineering Practices (SEPs)! Each of our SD Science Standards leads with one of the 8 SEPs and it is likely that several other SEPs will be addressed in your classroom activities to meet each standard. You'll probably have students with you in class as well as distant learning and they can still be sense-making scientists and engineers no matter where they are located. If you are looking for new ideas to incorporate the SEPs in diverse learning situations I suggest signing up for the MINKS & CO webinars that will be addressing the SEPs. Six webinars starting October 8 through May 13 will be led by a different state within the collaboration which will focus on different SEPs. Four rockstar SD science teachers will be leading the November webinar! 1 graduate credit is available for attending all six webinars. See the flyer in this newsletter as well as promoted on the DOE Science listserv for details.

Despite the summer looking much different for opportunities and travel, our South Dakota delegates for the [2020 National Youth Science Camp](#) were able to participate in a virtual version of the camp which had an exciting lineup of lectures and more intimate breakout seminars. I was sure envious of what was offered to them and wished I could have joined in. Stay tuned for application information for the 2021 National Youth Science Camp.

The professional development offered this summer was also virtual and I thank many of you who participated in the Applying the SD Science Translations trainings and the summer Student Sense-Making in Science online course. I always learn so much from each of you that I share back with other teachers. Also exciting is when I hear from teachers about their other experiences including time spent with SURF and SD Discovery Center trainings were also a highlight this past summer. I have always said that science in SD is strong and I am proud to be on the planning end now. Share any ideas you have with me for future PD that DOE can offer as I am designing our adventures for Spring and Summer 2021 using feedback I have already received.

"Share any ideas you have with me for future PD that DOE can offer as I am designing our adventures for Spring and Summer 2021 using feedback I have already received."



Join DOE Science Listserv 

To join the DOE Science listserv use this link:
<https://www.k12.sd.us/MailingList/DOEScience>

Here's a thought as you are planning. When you are using technology in your classroom have you considered aligning the activities to the K-12 Educational Technology Standards? The [2020 proposed standards are on the DOE website](#) after being revised this past summer and are now open for public comment. Once SD Board of Education approved, they will be fully implemented in the 2022-2023 school year. The standards are available for K-12 teachers in any content area to use and since SDSTA offers a SD STEM Ed Conference we can highlight the T in STEM by being intentional about the K-12 Educational Technology Standards. For now, you can take a look, and see how you may incorporate them, and leave some feedback as a public comment if you desire.

Please let me know how I can assist you as we move forward in these dynamic times and be sure to take care of yourselves!

~Jen

Jennifer Fowler

SD DOE Science Specialist

Jennifer.Fowler@state.sd.us



Professional Development



This 6-state collaborative (Missouri, Iowa, Nebraska, Kansas, South Dakota and Colorado) is designed to support science educators on a journey to implement 3-Dimensional standards in a supported and sustained learning network that draws upon multiple innovative perspectives and experiences.

This year, the MINKS & CO series will focus on the eight Science & Engineering Practices from the NGSS. Webinars will provide participants space to learn about each practice, how other science teachers are using it to equitably engage students in science learning, and discuss ways to deepen implementation in their own contexts. Emphasis will be placed on using the SEPs as a basis for lesson design to encourage student engagement in various learning environments.

Registration for each webinar is required. Please use the link/s below to submit your registration form. Information regarding each session will be sent out just prior to the webinar, and will include any provided resources along with connectivity information. All webinars are scheduled from 4:30-6pm CT, 3:30-5pm MT.

Graduate credit is available through Friends University. For additional information about this option, please contact Meg Richard (KS) at mrichard@ksde.org and use the "All Sessions" registration link below.

Webinar date	SEP Focus/es	Registration Link
October 8, 2020	Mathematical and computational thinking	http://bit.ly/MINKSCO-Oct8 
November 12, 2020	Asking questions and defining problems; Obtaining, evaluating, and communicating information	http://bit.ly/MINKSCO-Nov12 
December 10, 2020	Planning and carrying out investigations	http://bit.ly/MINKSCO-Dec10 
February 11, 2021	Analyzing and interpreting data	http://bit.ly/MINKSCO-Feb11 
April 8, 2021	Developing and using models – with literacy connections	http://bit.ly/MINKSCO-April8 
May 13, 2021	Engaging in argument from evidence; Constructing explanations and designing solutions	http://bit.ly/MINKSCO-May13 
All Sessions – for Credit 		https://forms.gle/hXHk2YGYL4zxtX88

Denise Clemens - 2019 PAEMST in Science Teaching



"Receiving the Presidential Award has been a truly humbling and reflecting experience. This achievement can only be due to the educators before me that have demonstrated a passion for teaching and the area of science. The value of the award is directed toward my former students, my family, and past and present coworkers. The recognition for what I do in the classroom is only a result of those people challenging me to always be the best version of myself I can be."

Denise Clemens has been an educator for 22 of her 25 years at Northwestern Area School District. Denise's other three years were teaching middle school and high school at Roncalli Parochial School. Denise currently teaches 9–12 grade biology, physics, chemistry, anatomy/physiology, and applied mathematics.



SD EPSCoR Summer Workshop Re-cap

While this past summer was certainly unique, some of South Dakota's science educators made the most of the circumstances by participating in virtual workshops hosted by SD EPSCoR. More than 180 teachers from across the state participated in remote training focusing on effective science teaching and incorporating the most recent biofilm research projects funded by SD EPSCoR.

Dr. Ben Sayler, NSF EPSCoR Track-1 education lead and professor at BHSU, believes that the virtual environment was a success. "We found that the virtual format both allowed many to participate who wouldn't have traveled, otherwise, and built relationships among teachers across geographic regions. These relationships have the potential to pay dividends long into the future."

During the training, participants engaged with one another in both large-group and small-group sessions that helped build community and connectedness between the attendees. Each day was focused on a theme with which participants were able to collaboratively engage. Each theme also corresponded with a biofilm lesson plan developed by SD EPSCoR that highlighted the daily theme. According to Sayler, participants were provided a \$300 stipend and the opportunity to earn a graduate credit for their work during the 3-day workshop.

SD EPSCoR will be offering more workshops next summer and is also looking at providing additional workshops during this school year, as well. Sayler added that the 2021 workshops are expected to be a mix of virtual and in-person and will include new material that will build on the framework established in 2020. New modules for the 2021 trainings will include resources for teachers of all grade levels. For more information about future workshops and other educational resources, visit the SD EPSCoR website at sdepescor.org/education.



SD EPSCoR

RESEARCH. EDUCATION. ECONOMIC DEVELOPMENT.

SD STEM Ed Conference

SD STEM Ed Conference

Save the date!

FEB. 4 - 6, 2021

We ARE planning on holding our Annual SD STEM ED conference in February.

As of now, we are proceeding as normal. Be looking for emails and watching the website for additional updates and links to register or to submit a proposal to present. YOU make the conference and we want it to be the best one yet. However, the board realizes that the COVID situation may upset our plans. We will be deciding this Fall and will make announcements if we need to cancel. If you register, and we cancel, you will be refunded.

Registration will open in November. We will have tiered registration pricing. New this year ...team pricing! Teams of teachers teaching in the same district, on the same invoice and paid by the same district check will be eligible for a team discount! Team discount will be \$40 when 3 or more paid registrations come in together & are paid by one invoice.

The SD STEM Ed Conference will be FEB. 4-6, 2021 in Huron. Over the past few years, the SDCTM/ SDSTA Joint Professional Development Conference (JPDC) Executive Board has been moving toward paperless registration. We will open on-line registration for the 2021 SD STEM Ed Conference (hosted by JPDC) around November 1st. This will be the same great conference we've had for the past 28 years! Participants will register online: check the websites for the link. You will receive an invoice at the email provided within 2 business days. The invoice can be paid online via credit card or PayPal or participants/school districts can mail a copy of the invoice with a check to: SDCTM/SDSTA JPDC Sheila McQuade, Treasurer c/o O'Gorman High School 3201 S. Kiwanis Ave, Sioux Falls, SD 57105.

PRESENTATIONS: We are accepting **session proposals** now. Consider putting together a session to share with other educators from around the state. Submit as many sessions as you want but you may not get acceptance of all. Both workshop or presentation style are welcomed. Presenters must be registered or exhibiting at conference. You will receive confirmation of acceptance by December 1. Projectors will be supplied as needed. Other materials or technology is the responsibility of the presenter.

We bring in a few Featured Speakers, but **the vast number of sessions are presented by South Dakota's best (that's you)** and that's a large part of the success of this conference. If you have presented before, thank you. I hope that you will present again for the 2021 event. If you have not presented before, please consider it this year. Let others benefit from your ideas and experiences. You can present with partner(s) if you are hesitant to go it alone the first time. Presenting a session is a fun and rewarding experience. You can be certain that you will have a friendly audience! The submission window closes on Oct. 31, 2020. **We can't wait to see what you all have in mind for your sessions! Hope to see you in Huron.**



SD STEM Ed

"I learned that courage was not the absence of fear, but the triumph over it. The brave man is not he who does not feel afraid, but he who conquers that fear." *Nelson Mandela*

Officer Submissions

Ice Cream!!! - James Stearns SDSTA Treasurer

Ice Cream in a Zip Lock Bag

Introduction

Ready to go back to the old school way? Homemade ice cream is fun to make and is a very tasty treat! I usually found time to do this activity between just before Thanksgiving and before Christmas break. Probably suitable for both a Physical Science class as it is for a Chemistry classroom. For example, you start with refrigerated/room-temperature ingredients and cool them into an almost solid ice cream. What changes are taking place? Do you have to go to a specific temperature? In this science activity you'll make your own ice cream in a zip lock bag!

Background

To make ice cream, the ingredients—milk, sugar and vanilla extract—need to be cooled down. One way to do this is by using a salt & ice mixture. Why salt? Salt lowers the temperature at which water freezes, so with snow/ice will melt even when temperatures are below the normal freezing point of water.

Materials

- Measuring cups & spoons
- Sugar
- Milk (Half-n-Half or heavy whipping cream may be used instead.)
- Vanilla extract
- Rock Salt (Any types of salt could be used but may give slightly different results.)
- Two small, sealable bags such as quart or pint-size & sandwich-size zip locks (two different sizes)
- A bag of ice or trays of ice cubes
- Winter gloves or oven mitts
- (Optional-You can use Kool-aid or similar for flavors)

Procedure

1. In each small bag, place one tablespoon of sugar, one half cup of milk product and one quarter teaspoon of vanilla extract. (If

you have flavors, add one quarter tablespoon or less.) Seal up each bag after adding the ingredients.

2. Add crushed ice cubes to large plastic size bag. Then add several spoons of salt to the bag.
3. Put your small sealed milk mixture bag into the large bag with the ice mixture. Be sure both bags are sealed shut very well. (With rough kids, I'd put the sealed milk mixture bag into another bag & seal before putting it in the ice mixture.)
4. Put on gloves/mitts (or wrap the bag in a towel) and then shake and squeeze the bag for at least ten minutes. Look at and/or feel the smaller bag every couple of minutes while you shake it.

What happens to the ingredients over time? When ten minutes are up, how do the ingredients look? What about the ice—how did it change over time?

What happened to the ingredients over time? You can also compare how cold the ice bag feels compared to the ice cream. Does one feel much colder than the other?

If you successfully made some ice cream, you can enjoy it now as a tasty reward for your challenge! If the ingredients in one of your bags did not become ice cream, you can put it back into the ice mixture and shake/squeeze it for another few minutes.

Cleanup

If you haven't already, you can enjoy your tasty ice cream treat now or save it in the freezer for later.



Officer Submissions

Find the Hidden Colors of Fall Leaves

Mark Iverson Past-President

From Scientific American

Have you ever wondered why leaves change from green to an amazing array of yellow, orange and red during the fall? Leaves get their brilliant colors from pigments made up of various size, color-creating molecules.

During the warm, sunny months, plants use their leaves to turn sunlight into food energy, a process called photosynthesis. This primarily uses a pigment that reflects green light, which gives the leaves their characteristic color.

In autumn, when colder, shorter days arrive, many kinds of trees no longer make food energy with their leaves and, consequently, no longer need the green pigment. The leaves' other pigments, some of which were already there during summer, become visible. Uncover these hidden colors of fall by separating plant pigments with a process called paper chromatography. What colors will you see?



Including Informal Science Learning Environments in Your Classroom

- Ashley Armstrong SDSTA President-Elect

The past seven months have brought some challenges. They have also brought opportunity for students to expand their science learning outside the classroom. Science teachers feel the strain of teaching about settings far from their classroom, in a simplified, tidy classroom version. What the recent adjustments have allowed us to do is seek out the science that students are exposed to every day, outside the classroom.

According to Learning Science in Informal Environments (2009), even for students in grades K-12, only 18.5% of learning is done in formal learning environments. These percentages of formal education drop drastically after high school graduation and are almost non-existent through adulthood. We must capture the world around our students and teach the relevance of science in everything they do. Learning Science in Informal Environments (2009) breaks these opportunities into six strands:

Strand 1: Developing Interest in Science

Strand 2: Understanding Science Knowledge

Strand 3: Engaging in Scientific Reasoning

Strand 4: Reflecting on Science

Strand 5: Engaging in Scientific Practices

Strand 6: Identifying with the Scientific Enterprise

Although we work to accomplish these strands every year in the classroom, there is ample opportunity to incorporate assignments that require students to explore science both inside and outside of their homes. In addition, many zoos, aquariums, natural history museums, science centers, and libraries have opened their doors, for free! Students can now explore distant national and international sites that they may never have the opportunity to see in person.

This year, let's make it our goal to expose students to things that pique their interest, motivate them to learn more, and form a level of excitement that keeps them coming back. Let's bridge the gap between formal and informal learning and take full advantage of the resources that have been place at our fingertips.

Reference:

Learning Science in Informal Environments. (2009). National Academies Press.
<https://doi.org/10.17226/12190>

Google Chrome Extensions for Teachers



Smallpdf- Edit, Compress and Convert PDF

Convert your pdf worksheets into editable word documents, merge multiple pdf documents together and much more!



Save to Google Drive

Save screenshots of entire web pages directly to your google drive.



Screencastify- Screen Video Recorder

Narrate and record lessons from your desktop, an application window, or with a webcam. You can easily edit your videos which autosave to your Google Drive and post directly to your google classroom.



EquatIO- Math Made Digital

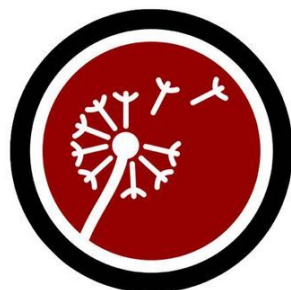
Easily add equations, formulas, subscripts and superscripts to questions in google forms.



Mote- Voice Notes & Feedback

Add voice comments in google docs, sheets, slides or google classroom. It even works in google classroom private comment sections. You can also save commonly used feedback to your "motebook".

If you have any questions about technology, curriculum, need some advice, etc. join the Facebook page SD Sci



SDSci



Officer Submissions

Phenomenal Teaching - Ally Bowers SDSTA Liason

This week, after patiently asking my students to stop touching each other, one of them asked me, "Could you get COVID from a wet willy?" (For anyone unfamiliar with the wet willy, this is where one wets their index finger in their mouth and then places it into another's ear. Why? Who knows.)

These were seniors in an Anatomy & Physiology course, so it was a great opportunity for us to discuss what we currently know about the virus, and what we know about mucus membranes. We came to the conclusion that transmission of COVID-19 via wet willy was unlikely, but that it would still be great if we didn't lick our hands during a global pandemic.

While COVID-19 has brought many challenges to our daily lives, it does bring up great science questions. As we navigate the pandemic (with sensitivity to our students' experiences), there are many teachable moments to be found. Distant relative or acquaintance share a crazy article on Facebook? Find two more articles and have students practice evaluating the authors' claims and the legitimacy of sources. Students don't think masks work? Ask them to design an experiment to find out. Teenagers claim that masks don't stop their classmates fart particles, and therefore couldn't possibly stop viruses? Have an impromptu lesson on scale, proportion, and quantity!

Public health is heavily dependent on having a scientifically literate population, so use these teachable moments when they pop up. If you come up with a neat lesson idea, feel free to share it in our Facebook group, SDSci!

Scholarships to SD STEMEd Conference - Ally Bowers

Despite the turbulence of 2020, plans are in the works for the 2021 SD STEM Ed Conference. Assuming that we are all able to gather together safely in February, I wanted to provide some reminders of the scholarship opportunities that exist for early career teachers to attend the conference.

First-year teachers can attend for FREE, thanks to the [Goehring/Veitz Leadership Scholarship](#). When first year teachers register for the conference, they can join SDSTA and include their application for the scholarship with their conference registration. An administrator simply verifies that the registrant is in their first year of teaching. If you are a first year teacher, or have a brand new colleague in your building, please apply or invite them to apply! Teachers who are in their second through fifth year of teaching can apply for the [Marian Filbrandt Memorial Scholarship](#). This scholarship provides funding to help cover the cost of registration, travel, and lodging. The deadline for this scholarship is December 1, which is prior to our winter newsletter, so visit our [website](#) and scroll to the bottom of the page for details and links to the applications! Stay safe, we hope to see you in February!

2021 SD STEM Ed Conference Session Proposals

Consider putting together a session to share with other educators from around the state.

- Submit as many sessions as you want but you may not get acceptance of all.
- Both workshop or presentation style welcomed.
- Presenters must be registered or exhibiting at conference.
- Proposals are due by October 31, 2020
- You will receive confirmation of acceptance by December 1.



Projectors will be supplied as needed. Other materials or technology is the responsibility of the presenter.

Officer Submissions

Call for Nominations for SD OBTA - Jeff Peterson SDSTA Liason

Congratulations to last year's OBTA recipient Lisa Fuccello, from Brandon Valley HS. The Outstanding Biology Teacher Award honors teachers of the Life Sciences. Nominated teachers need not be a full time life science teacher, rather they must be consistently teaching some amount of life science. OBTA recipients are awarded a plaque and a 1,000 dollar stipend sponsored by Sanford health. The award itself is sponsored by the National Association of Biology Teachers, and each state's awardees are honored at the NABT National Conference each year.

To nominate a teacher email the following information to the SD OBTA Director Jeff Peterson; jeff.peterson@k12.sd.us.

1. Name of Nominee
2. School
3. Email address
4. Phone number
5. Your name and email should I need to contact you.



After receiving the nomination, the nominee will be notified and encouraged to start the application process. A committee reviews applications in the spring and selects the next OBT.

Positive Thoughts on GIZMOS - Sabrina Henrikson SDSTA Liason

Sabrina Henriksen says "With the uncertainty and JAVA not supported after December we wanted something reliable for learners to have access to at least simulations for science. Gizmos has lots of simulations for the different branches of science."

From a colleague - "If students do end up being at home majority of the year this would be an invaluable resource to be able to use when in person labs are not possible. And many Labs done in science are not realistic to have students do at home.

During a regular school year this would still be a great resource to use. If a student misses a Lab this gives them the ability to make up a lab. This is especially beneficial for some labs that are time sensitive or that take up a lot of space. Also, if you have an advanced student wanting to move ahead this gives the option to do so using virtual labs when an in-person lab is not possible to do every time. "

We liked the flexibility of content. We haven't really used any yet but like the promise of the different topics and the ability for differentiation.



The SDDOE Office of Assessment is pleased to announce that Gizmos by Explore Learning is now available as a resource for Science teachers who participate in the state's assessment system for the 2020-2021 school year. Gizmos is intended to support classroom instruction for teachers who administer SDSA or SDSA-Alt just as Tools for Teachers supports ELA and Math.

Gizmos are online simulations and case studies that excite curiosity and invite interaction. With over 400 standards-aligned simulations, students can get hands-on with science—virtually! For 2020-2021, South Dakota science teachers who administer the state assessments will have access to Explorer Learning's Gizmos.

Questions: Christina.Booth@state.

Student Opportunity

SD-AAPT High School Photo Contest

SD-AAPT High School Photo Contest — Rules and Entry Agreement

(this page must be returned with submission)

Rules

- Photos must be unmounted, 8" x 10" or 8.5" x 11", and may be either black-and-white or color. Traditional photos must be submitted on photographic stock. Photos taken with a digital camera must be submitted as a high-quality print on photo stock and be trimmed to 8" x 10" or 8.5" x 11".
- **If photos are taken with a digital camera:** an unmodified electronic file must accompany the submission. *(Small adjustments to brightness, ... is acceptable.)*
- Computers shall not be used to modify or enhance photos.
- Only one photo per student. (Multiple small photos on one 8.5" x 11" sheet are not allowed.) Only one student per entry. (Photo cannot be taken by two or more people.)
- The student must take the photo.
- The submission must include the following information both in hard copy and on a computer floppy, or CD(PC format: MS Word){or emailed to James@SDSTA.org};
 - Student's name, complete home mailing address and email address;
 - Student's high school & complete school address;
 - School phone number;
 - Teacher's name and email address;
 - Specify "Natural" or "Contrived" category entry;
 - Essay of 250 words or less describing the physics in the photo. The essay should have a title and must be written by the student. (Hand-written submissions are not acceptable and will be disqualified.)

We cannot mail prizes if we do not have complete mailing addresses. Email and phone numbers may be used to contact you with questions, but will not be sold or otherwise used for marketing purposes.

Entrant grants SD-AAPT permission to post their submission on the SD-AAPT website, or to use it in SD-AAPT publications or marketing materials. Submissions will not be returned. Any submission which does not meet the above criteria will not be considered.

I have read the above rules and agree to all terms and conditions. I understand that if I omit or falsify information, or if I do not sign this form, I will not be eligible for this contest.

Student signature

Date

Home address

Student email address

Student's High School

H. S. Address

School Phone Number

Teacher's name & email

Is your photo (Circle one) "Natural" or "Contrived"

Send entry to: James Stearns
15 North Fifth Street
Groton, SD 57445-2024

Classroom Resources

Free Science Resources and Support from the Sanford Underground Research Facility

Each year at this time, the SURF Education team reaches out to remind you of the resources that we have available for science. We know that this year may look quite different. And it's very possible that your needs are different than they have been in the past. We are still here to support you! And we are adapting our resources as well. As a reminder, we offer the following:



Field Trips: Want to visit our Hoist Room? The Waste Water Treatment Plant? How about the Davis Campus (nearly a mile underground) where much of the science research is conducted? Most years, we offer field trips to visit SURF. However, this year, we are going virtual! Our communications team has created virtual tours that we can offer students, along with Q&A opportunities and interactive activities. Please contact our Education team if this is something you are interested in. Those of you that have been too far away for a field trip...not any more!!!!!!!!!!!!!! We'd love to connect.

Class Presentations: We also have always offered to come to your class to provide interactive presentations about the science and engineering that happens at the Sanford Underground Research Facility. Again, we are still providing presentations. We just will come to your class via Zoom instead of face to face.

Curriculum Units: Our curriculum units are available as usual. We have actually added several new curriculum units in the past year. Definitely check out our offerings. For those of you not familiar with our curriculum units, they are fully designed curriculum units, aligned to SD science standards, and they come with a teacher facilitation guide and all of the materials needed for implementing the lessons. Elementary teachers...MANY of our curriculum units are designed for you and your students!!!

Just in Time Support: Reach out! If you need ideas, suggestions, resources, connections to unsettled science, strategies...we're here to help.

And finally...a reminder that these resources are free for SD teachers to use. The SURF family wants to support high-quality, engaging, relevant, equitable, and rigorous science learning opportunities for all students. We provide these resources to you and your students at no cost to you or your school district.

You can also email us at: BHSUSURFEducation@bhsu.edu



Seeking K-5 Lesson Field Testers

The South Dakota Discovery Center is seeking K-5 educators to pilot lesson plans on soil health. A stipend of \$1000 will be provided with a certificate for 15 contact hours.



Selected educators will:

- Attend an orientation training.
- Read and review lesson plan, completing a detailed form.
- Implement with students and evaluate at least two activities from the lesson plan.
- Be available for follow up interviews.

Timeline

- Applications due by October 16
- Selection made by October 31
- Orientation November
- Field test completed by April 30, 2020.



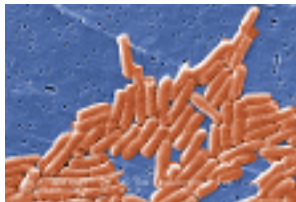
COVID19 Disclaimer

Due to the uncertainty of in class instruction time during the time line above, a half stipend will be provided for those who read and review the lessons if they are unable to present the lessons due to COVID19. Field testers can consult with the project director to discuss lesson modification to online or remote instruction. A full stipend will be provided for those that teach the lesson remotely or online.

Virtual Resources and Professional Development

Virtual Resources for Microbiology

Drexel University College of Medicine - Virtual Microbiology Lab II - Kirby-Bauer Disc Diffusion Method. Students learn how to prepare a bacterial plate and place antibiotic discs on it then measure the zones of inhibition. From that data, they determine which antibiotic would be most effective for Gram + and - bacteria.



NC Community College BioNetwork - Virtual Microscope is the first fully interactive 3D scope.

It's a great practice tool to prepare you for working in a science lab. Learn terminology, usage, and care by interacting with a fully functional, virtual microscope. When you're ready, challenge your knowledge in the testing section to see what you've learned.



Virtual Science Labs and Apps

1. **Project Noah**—Provides teachers with hands-on experiments for their students to conduct.
2. **Prepmagic**— Provides students with science simulations that promote learning.
3. **Mystery Science**— Well thought out science curriculum and experiments.
4. **Science Buddies**— Provides help for students conducting science experiments.
5. **Exploratorium**— A comprehensive resource for people looking for help with science projects and experiments.
6. **Codecademy**— The site contains a large cache of science simulations.
7. **Frog Dissection**— Frog dissecting, can now be done virtually. Featuring step-by-step instructions, there is plenty of in-depth information on each of the frog's organs including anatomical comparisons to human organs.
8. **Stephen Hawking's Snapshots of the Universe**—This app includes 10 interactive experiments and video segments to help students study our universe.

NSTA Engage: Fall 2020

Get ready for energizing moments, remarkable stories of inspiration, thought leadership, and much more at NSTA Engage: Fall20 ! Taking place November 13–15, this live, interactive, three-day conference will feature unique virtual networking opportunities with colleagues from around the country, motivating sessions led by outstanding educators on important topics, and enlightening presentations from leading experts addressing current challenges affecting the science education community today. NSTA Engage: Fall20 will also feature a dynamic virtual Exhibit Hall, where companies and organizations will showcase the latest science education materials, tools, and products available. More specific scheduling information and conference registration details will be shared on the NSTA Engage: Fall20 conference page in the coming weeks.



Request for Information on STEM Education



On behalf of the National Science and Technology Council's (NSTC's) Committee on STEM Education (CoSTEM) and in coordination with the White House Office of Science and Technology Policy (OSTP), the National Science Foundation (NSF) requests input related to the implementation of the Federal STEM Education Strategic Plan, Charting a Course For Success: America's Strategy for STEM Education.

DATES: Interested persons are invited to submit comments on or before 11:59 p.m. ET, October 19, 2020. Comments submitted in response to this notice may be submitted online to: CoSTEM@nsf.gov. Email submissions should be machine-readable [PDF, Word] and not copy-protected. Submissions in the subject line of the email message should include "Individual/Organization Name: STEM RFI Response" (e.g., Johnson High School: STEM RFI Response).

Classroom Resources

Biology of SARS-CoV-2 from HHMI

This three-part animation series explores the biology of the virus SARS-CoV-2, which has caused a global pandemic of the disease COVID-19.

SARS-CoV-2 is part of a family of viruses called coronaviruses. The first animation, Infection, describes the structure of coronaviruses like SARS-CoV-2 and how they infect humans and replicate inside cells. The second animation, Evolution, describes how these viruses evolve and discusses positive, negative, and neutral mutations. The third animation, Detection, describes the methods used to detect active and past SARS-CoV-2 infections. These animations are also available in a YouTube playlist.

The accompanying “Student Worksheets” incorporate concepts and information from the animations. The “Version 1” worksheet is appropriate for general high school biology students, and the “Version 2” worksheet is appropriate for AP/IB Biology and undergraduate students.

The “Resource Google Folder” link directs to a Google Drive folder of resource documents in the Google Docs format. Not all downloadable documents for the resource may be available in this format. The Google Drive folder is set as “View Only”; to save a copy of a document in this folder to your Google Drive, open that document, then select File → “Make a copy.” These documents can be copied, modified, and distributed online following the Terms of Use listed in the “Details” section below, including crediting BioInteractive.



**GET
UNLIMITED ACCESS
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LESSON PLANS**

Don't let a paywall stand in between you and the content you want and need. Become an NSTA Member and get unlimited access to our full library of lesson plans!



Why did the teacher write on the window?

Because she wanted the lesson to be very clear!

Professional Development/Classroom Resources

National Geographic OnLine Courses Fall 2020

Courses are open to any educator from anywhere in the world who works with students in either a formal or informal setting. In many of our courses, learners can earn graduate credits through university partnerships.



- CONNECTING THE GEO-INQUIRY PROCESS TO YOUR TEACHING PRACTICE
- TEACHING GLOBAL CLIMATE CHANGE IN YOUR CLASSROOM
- COLLECTING DATA TO EXPLORE PLASTIC POLLUTION IN OUR COMMUNITIES
- MAPPING AS A VISUALIZATION AND COMMUNICATION TOOL IN YOUR CLASSROOM
- INTEGRATING SERVICE WITH LEARNING GOALS

"I have taken several of these courses over the past year and have found them all well designed. They give you some flexibility, allow you to converse with other teachers through comments, and aid in the development of projects to implement with your students." - Julie Olson

* We are working on being able to get CEU's with the SD DOE for these courses. You can also sign up (and pay) for credits through a university associated with the organization.

Seek App by iNaturalist

Take your nature knowledge up a notch with Seek! Use the power of image recognition technology to identify the plants and animals all around you. Earn badges for seeing different types of birds, amphibians, plants, and fungi and participate in monthly observation challenges.

- Get outside and point the Seek Camera at living things.
- Identify wildlife, plants, and fungi and learn about the organisms all around you.
- Earn badges for observing different types of species and participating in challenges.



"Students love the challenges and identification of all types of organisms." Julie Olson

Elementary Edible Experiments from the Royal Society of Chemistry

From finding out why mustard burns your nasal passages but chillies don't, the link between beetroot and camels, why you might taste boiled potatoes when you eat cheddar cheese or how beetles can make a surprising contribution to our food – there are experiments for everyone. Watch the videos for an overview of the chemistry, then download the demo sheet to find ideas of how you can present them.

Enthuse your students, excite the general public or just amaze your pals. Let's get people talking about chemistry that's relevant and fun, and help to inspire them.



- Bitter Orange
- Blowing Hot and Cold
- Candy Coatings
- Cheesy Chemistry
- Earth's Perfume
- Sherbert and Popping Chemistry
- many more....



Equipment Lending Library

Sanford Research believes every student should have access to the resources to pursue careers in science and research. As a result, Sanford PROMISE is committed to sharing over \$40,000 of resources and supplies with schools. Educators at academic institutions across the region have access to the technology housed in the Sanford PROMISE Community Lab at no charge.

Failure to return equipment on time, without damage, may result in removal of future lending opportunities.

All equipment must be reserved using the request form. First priority is always given to educators who have attended Sanford PROMISE educator workshops. All other equipment distribution is prioritized on a first-come, first-served basis after completion of the request form. Homeschool educators are welcome to request equipment from the lending library.

See activities and equipment available.



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STEM Outreach for Sanford Research

We teach K-12 students and teachers, undergraduates, graduate students and the community.

Our goals:

To increase community understanding of science, raise awareness of the benefits of research, and emphasize the role of both in our society.





<https://blogs.nasa.gov/educationexpress/>

What's new?

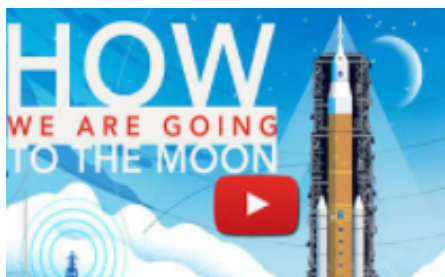
Click on the pictures for more!



The SpaceX Crew-1 official crew portrait with (from left) NASA astronauts Shannon Walker, Victor Glover, Mike Hopkins, and JAXA (Japan Aerospace Exploration Agency) astronaut Soichi Noguchi.



Artemis is the first step in the next era of human exploration. Together with commercial and international partners, NASA will establish a sustainable presence on the Moon to prepare for missions to Mars.



NASA to Host Preview Briefings, Interviews for First Crew Rotation Mission with SpaceX

NASA will highlight the first crew rotational flight of a U.S. commercial spacecraft with astronauts to the International Space Station with a trio of news conferences beginning 11 a.m. EDT Tuesday, Sept. 29. The briefings, which will take place at the agency's Johnson Space Center in Houston, will air live on NASA Television and the agency's [website](#).

NASA's SpaceX Crew-1 flight mission, scheduled to launch no earlier than Oct. 23, will carry astronauts Michael Hopkins, Victor Glover, and Shannon Walker of NASA and Soichi Noguchi of the Japan Aerospace Exploration Agency (JAXA).

Michael Hopkins is commander of the Crew Dragon spacecraft and the Crew-1 mission. Hopkins is responsible for all phases of flight, from launch to re-entry. He will also serve as an Expedition 64 flight engineer aboard the station. Selected as a NASA astronaut in 2009, Hopkins spent 166 days in space as a long-duration crew member of Expeditions 37 and 38 and completed two spacewalks totaling 12 hours and 58 minutes. Born in Lebanon, Missouri, Hopkins grew up on a farm outside Richland, Missouri.

Victor Glover is the pilot of the Crew Dragon spacecraft and second-in-command for the mission. Glover is responsible for spacecraft systems and performance. He also will be a long duration space station crew member. Selected as an astronaut in 2013, this will be his first spaceflight.

Shannon Walker is a mission specialist for Crew-1. As a mission specialist, she will work closely with the commander and pilot to monitor the vehicle during the dynamic launch and re-entry phases of flight. She will also be responsible for monitoring timelines, telemetry, and consumables. Once aboard the station, Walker will become a flight engineer for Expedition 64. Selected as a NASA astronaut in 2004, Walker launched to the International Space Station aboard the Russian Soyuz TMA-19 spacecraft as the co-pilot, and spent 161 days aboard the orbiting laboratory. More than 130 microgravity experiments were conducted during her stay in areas such as human research, biology, and materials science.

Soichi Noguchi will also be a mission specialist for Crew-1, working with the commander and pilot to monitor the vehicle during the dynamic launch and re-entry phases of flight, and keeping watch on timelines, telemetry and consumables. Noguchi will also become a long-duration crew member aboard the space station. During STS-114 in 2005, Noguchi became the first Japanese astronaut to perform a spacewalk outside the space station.

[Read the entire article here...](#)

The NASA EXPRESS message features updates from NASA and STEM associates about workshops, internships, and fellowships; applications for grants or collaborations; promotions for student and educator opportunities; online professional development; and other announcements.

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UPCOMING EVENTS

September 29

NASA's SpaceX Crew-1 Interview

NASA Live



October 31

STEM Ed Conference Session Proposals

Anyone can do it!



November 1

Registration Opens

SD STEM Ed Conference

December 15

Newsletter Submissions due

Any member may submit lessons, ideas, links..

February 4-6, 2021

SD STEM Ed Conference

Huron, SD

The SDSTA Newsletter is published four times a year and is e-mailed to 98 paid members. 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

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15 North Fifth Street
Groton, SD 57445-2024

Name _____ Home Phone _____

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Your School _____ School Phone _____

School Address _____

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

Referred by _____