

# SDSTA

South Dakota Science Teaching Association

Summer Issue | Date: June 19, 2023

Science Education Enthusiasts,

After what seemed like an everlasting winter, summer is finally here! I know that many of you pushed on far past your projected “last day of school,” and are likely enjoying a much-deserved break. With that being said, we all know that summer is a great time to refresh your mind and body, and to prepare for the upcoming school year.

If you’re looking to fill your summer with some professional development, there are still opportunities to do so. Please read through the newsletter to find openings in your area and/or virtually. Know that many of the professional development opportunities that are currently taking place open early, so keep an eye out for those announcements around the February 2024 time frame.

Have you started thinking about the 2024 SD STEM Ed Conference? The date is set! Join us in Huron February 1-3, 2024, for a weekend of learning, collaboration, and fun. We have an exciting weekend planned and recently announced our banquet featured

speaker-Graham Fletcher. Sessions throughout the conference focus on science, math, pedagogy, relationships, CTE connections, engineering, resources available to teachers, curriculum, and MORE. We are currently looking for teachers from across the state to contribute their session to the conference schedule. Think about something that works well in your classroom. What lesson have you used that students are particularly engaged in? Submit your proposal [HERE](#).

Above all, remember, summer is your time to recharge, take care of yourself, and make sure that you are ready to foster curiosity in the minds of your students this fall.

Ashley Armstrong  
SDSTA President

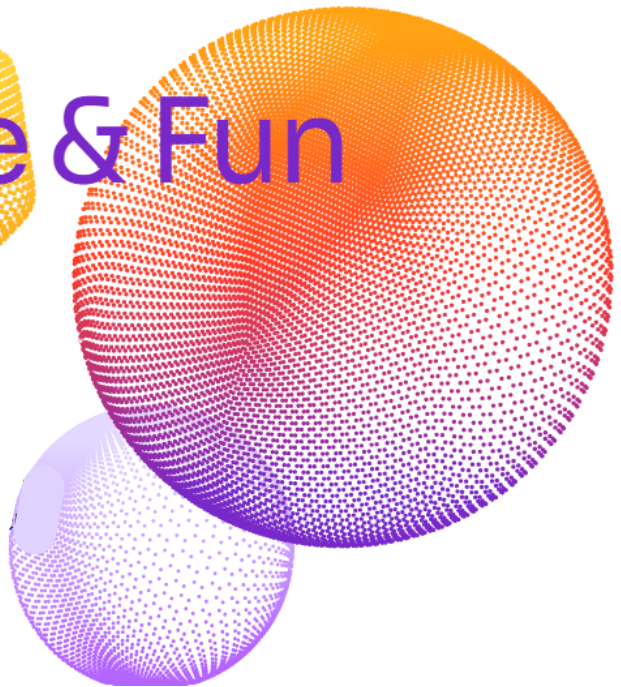




# Where Science & Fun Collide

**JUL 08 2023** Lead, **South Dakota** & Everywhere Else

Neutrino Day is Sanford Underground Research Facility's free, citywide science festival. Join us for hoistroom tours, science activities and exhibits for all ages, live video chats with scientists underground, and engaging talks about the research happening beneath your feet.



## Neutrino Day - Sanford Underground Research Facility

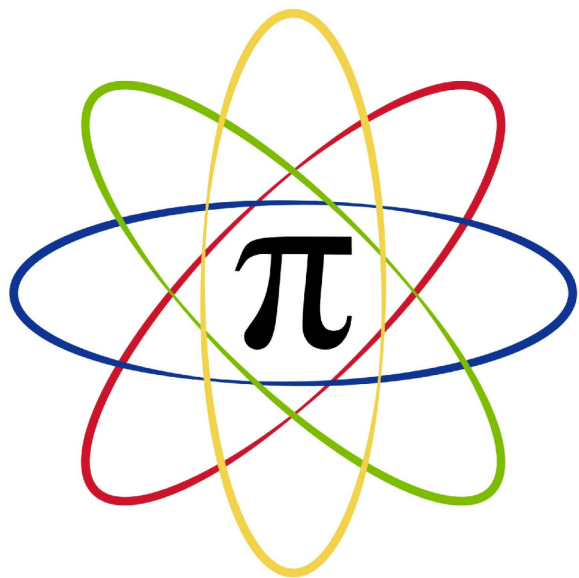
# About SURF

**Our mission is to advance world class research and inspire learning across generations.**

Deep underground, scientists at Sanford Underground Research Facility (SURF) search for answers to the most fundamental questions about the universe. SURF is the United States' deepest underground science laboratory. The facility's depth, rock stability and history make it ideal for sensitive physics experiments that need to escape cosmic rays, as well as for research into biology, geology, and engineering. The impacts on science can be seen worldwide.

But our impacts go beyond science: Based on South Dakota's science standards, our education specialists work to create and advance innovative educational programming at the local, state, and national levels.





## SD STEM Ed

Proposal deadline is  
October 31

## SD STEM ED Conference

February 1, 2, & 3, 2023  
Huron, SD

INTERESTED IN PRESENTING?

WE'D LOVE TO HEAR YOUR IDEAS!

SEE THIS **FORM** TO  
SUBMIT A SESSION PROPOSAL

## From NSTA

The NCCSTS Case Study collection, featuring nearly 1000 cases, is now freely accessible. With no membership or subscription required to access the cases, educators and students alike can now freely search the collection and access individual cases.



The Teaching Notes and Answer Keys will remain accessible only to vetted teachers and there is a nominal yearly subscription fee associated.

## Sanford Underground Research Facility Sponsors Immersive Water Experience in the Kirby Science Discovery Center

**Sioux Falls, SD**— The Sanford Underground Research Facility (SURF), managed by the South Dakota Science and Technology Authority, is the sponsor of the new immersive water experience coming this summer to the Kirby Science Discovery Center. The former “Room to Grow” exhibit on the second floor is currently under construction to create a new, one-of-a-kind experience.

“The Sanford Underground Research Facility is proud to have a new partnership with the Washington Pavilion—one of South Dakota’s premier science education and outreach centers. We look forward to the opportunity to share the excitement of the Sanford Underground Research Facility with our neighbors in eastern South Dakota,” says Mike Headley, Executive Director of the South Dakota Science and Technology Authority and Laboratory Director of SURF.


The new immersive water experience will include interactive, colorful and educational features to help children learn about the phases of water through fog pipes, fog mushrooms and rain clouds. Children also will explore how water moves through aqueducts, conveyors, faucets, river channels, squirt guns, whirlpools, fountains and more, all while having fun.

The Sanford Underground Research Facility is sponsoring the exhibit in addition to partnering with the Washington Pavilion on programming opportunities. As America’s deepest underground science laboratory, SURF has a mission to support the advancement of world-class science and inspire learning across generations. The organization develops unique K-12 outreach programs for future scientists, delivers exciting opportunities for discovery to community audiences, creates collaborative spaces for scientists from around the world and supports extraordinary projects.

“We are so grateful for the Sanford Underground Research Facility’s investment in the Kirby Science Discovery Center and excited to see children using this fun space later this summer,” says Kerri DeGraff, Chief Operating Officer with Washington Pavilion Management, Inc. “This exhibit will be unique to our museum and offer both hands-on learning and full-on joy to those who come here.”

Construction is currently underway to make physical improvements in the space, including new flooring, paint, wall graphics and the physical exhibit. The Washington Pavilion has engaged Boss Display to design the exhibit.

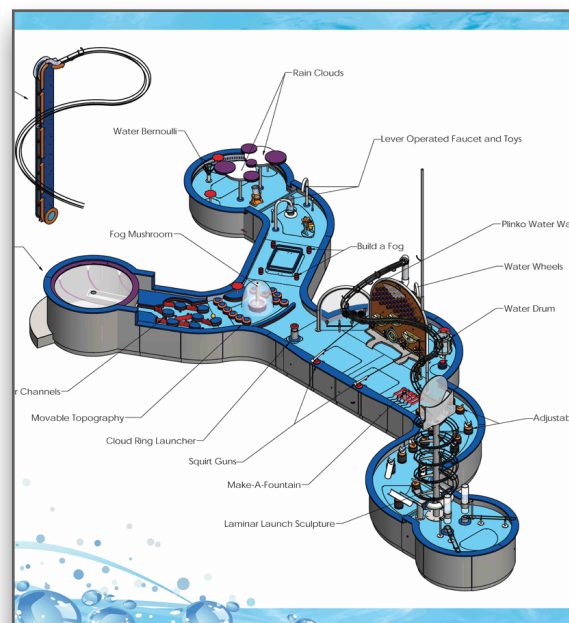
The sponsorship agreement is valued at \$80,000 over five years, which includes funding to offer a day of free admission to the Kirby Science Discovery Center and Visual Arts Center after the new immersive water exhibit opens in early July. More details on the grand opening and free admission day are coming soon!

For more information and visuals, go to [WashingtonPavilion.org/Water](https://WashingtonPavilion.org/Water). 

### **About Washington Pavilion Management, Inc. (WPMI)**

Washington Pavilion Management, Inc. is a private 501(c)(3) nonprofit organization and the largest arts organization in the state. The management company oversees and programs two historic City of Sioux Falls facilities: the Washington Pavilion of Arts and Science and the Orpheum Theater Center. The company also provides professional management services, including administration; arts, science and educational programming; ticketing; event management; marketing; and more to other arts and nonprofit organizations. For information, please visit [WashingtonPavilion.org](https://WashingtonPavilion.org).

*Since this press release, the date has been set. The ribbon cutting of this exhibit at the Washington Pavillion will be at 11:00 a.m. CT on Friday, July 21. The day of free admission will be Saturday, July 22.*



Rendering courtesy Washington Pavilion

## South Dakota Science Teaching Association Industrial Arts and Ag Grants

The South Dakota Science Teaching Association (SDSTA) invites applications from South Dakota teachers for the SDSTA Industrial Arts and Ag Grants. The award seeks to encourage professional growth and involvement of those K-12 educators who teach STEM in South Dakota through school Industrial Arts and Agriculture classroom.

### Available Funds

SDSTA has a maximum of \$1,000 available for grants to assist in the cover of costs to attend the SD STEM ED Conference for 4 to 5 educators.

### Purpose

One of the cornerstones of STEM education is the integration of a wide variety of disciplines to provide tools for students to explore real questions and phenomena. There is no better place to find relevant phenomena than our Agriculture and Industrial Arts programs where students often take on complex science and engineering projects to solve real world problems and challenges.

The **SDSTA Industrial Arts and Ag Grants** were established and funded by the South Dakota Well Drillers Association to create a bridge between all STEM educators across the curriculum and to explore partnerships that can provide opportunities for students to investigate real world and real life phenomena with depth and rigor that will help prepare them for 21st century careers. Career and Technical Education courses utilizing STEM foundations and concepts will provide an experience for our students that will support them in a diverse variety of continuing education and career opportunities. The Annual SD STEM Ed Conference offers an opportunity for all K-12 teachers of STEM to grow professionally by learning and sharing best practices. This is an opportunity to network and learn from each other and to connect with mentors and local, state, and national leaders.

### Scope of Program

Funds may be used to assist with the cost of attending the Annual SD STEM Ed Conference.

- Grant to attend the Annual SD STEM Ed Conference  
A minimum of \$100 and a maximum of \$250 may be requested to cover the costs of attending the conference. Acceptable costs include the cost of a substitute (not to exceed \$100), motel room (1 or 2 nights), the Friday Night Banquet, conference registration, and travel. If you receive this grant, you are required to share what you learned with your school district.

### Eligibility

Applicants must be:

- K-12 teachers of STEM who have not previously attended the South Dakota STEM Ed Conference or it has been 5 years or greater since you last attended.
- K-12 teachers who teach STEM and/or intentionally integrate STEM into other content areas such as Industrial Arts and Agriculture Programs.

### Application Submission Guidelines and Deadline

- Applications are due by December 1.
- Awardees will be notified by December 15.

More information and form can be found at the [SDSTA website](#).



Contact Chad Ronish at [chad.ronish@bhsu.edu](mailto:chad.ronish@bhsu.edu), if you have any questions about the grant.

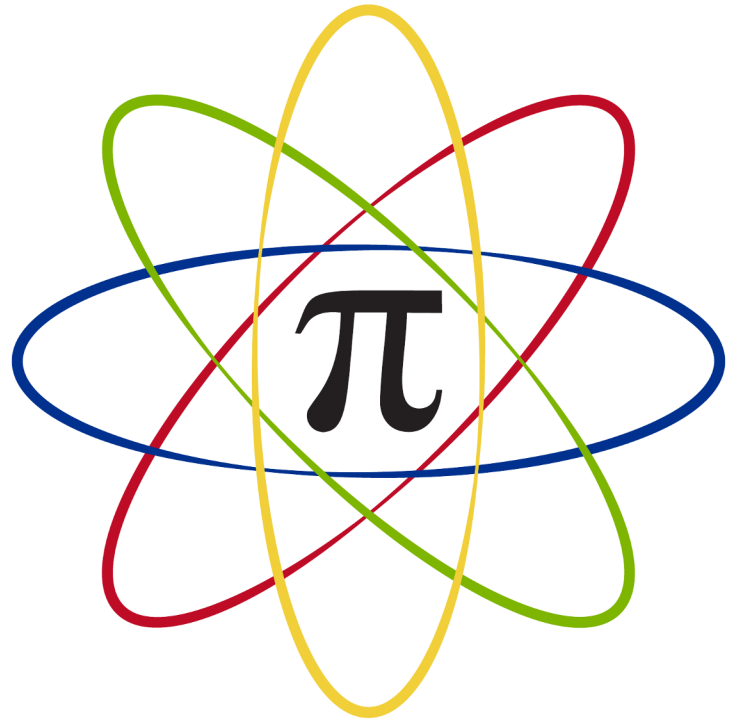
# Member Submissions

**SD STEM Ed Conference** - James Stearns, Conference Program Chair

## Mark your calendars for the SD STEM Ed Conference – February 1-3, 2024

It's never too early to submit your Speaker Proposal form. The **32nd Annual SDCTM/SDSTA Professional Development Conference** will be held in Huron. It starts with Thursday night, February 1, 2024 sharing sessions, continues with Friday & Saturday sessions, and has a Friday night banquet with Graham Fletcher as the speaker. There will be a few featured speakers, but some of the best sessions are presented by South Dakota's best (that's you)! If you have presented before, thank you. I hope that you will consider presenting again. If you have not presented before, please consider it this year. Let others benefit from your ideas and experience. If you're hesitant about going it alone, you can present with partner(s). Presenting your lesson can be a fun and rewarding experience! The Speaker Proposal form is [online](#) and can be found online until November 1, 2023.

You could wait until later to submit a proposal, but why wait until the last minute? If you remember a lesson that you taught this year or an activity that you did, write up a presentation to share with your fellow teachers. You have the link (above) so I'd suggest you do it now as I'd really like to see what you have in mind. If you have problems or questions, feel free to contact me at [James@SDSTA.org](mailto:James@SDSTA.org)



# SD STEM Ed

### \*\*\*We are looking for STEM activities at all levels.

- ▶ Each session will last about 50 minutes.
- ▶ Submit as many sessions as you want but you may not get acceptance of all.
- ▶ Both workshop or presentation styles are welcomed. - Presenters must be registered or exhibiting at the conference.
- ▶ Proposals are due by October 31, 2023.
- ▶ You will receive confirmation of acceptance by December 1.
- ▶ Nearly all conference rooms have cables (projectors) with multiple ends that connect to the screens in the room, but not every type of cable connection is necessarily available.
- ▶ Presenters are welcome to bring their own devices. All other materials or technology is the responsibility of the presenter.

# Member Submissions

## Sharing Indigenous Peoples' Stories in the STEM Classroom - SURF

We all know how important cross-cultural representation is for building accepting, empowered, and engaged young citizens, but it can sometimes be hard to know how to do this in the STEM classroom. Historical examples of Indigenous STEM (like ethnobotanical uses of plants, math in Winter Counts, or Lakota Star Knowledge) are a starting place but don't tell the whole story. Exclusively using historical examples, and especially historical language, can contribute to erasure of Native Americans by failing to position them in a modern context, and leaves out the amazing modern examples of Indigenous STEM both in the northern plains and across the country.

Enjoy exploring a few modern examples of Indigenous People doing STEM here in the Great Plains!

- [Red Cloud Renewable Energy](#)
  - Incorporate into lessons about electricity, alternative energy, energy transfer (solar furnace!), climate change, and sustainability!
- [NASA Atmospheric Science Research at Sitting Bull College](#)
  - Research at the college incorporates traditional ecological knowledge with modern data collection!



SURF E&O Staff at Red Cloud Renewable



Little Wound Students Participating in food sovereignty initiatives at Thunder Valley CDC

- Regenerative Agriculture
- There are dozens of groups looking at ways to make our agricultural systems more sustainable in the face of climate change in food insecurity.
- [Documentary about Lakota Food Sovereignty](#)
- [Webpage about Traditional Ecological Knowledge in Resource Management](#)
- [USDA Resources including recipes!](#)
- [High School Student Research](#)
  - Elise Dubray of Timber Lake went to the International Science and Engineering Fair for her research on Buffalo!

A few tips to build your confidence in sharing stories about other cultures -

1. If you incorporate one of these examples in a future lesson and your students have questions about L/N/Dakota culture it is ok to share that you don't have all the answers and are learning alongside them!
2. It's better to share a positive example that your Native students can identify with than to leave this content out due to your own fear of sharing someone else's story or stumbling over a pronunciation.
3. If you have a classroom with a few Native students, don't put them on the spot to talk about these topics but empower them with the knowledge that you are curious if they care to share with the class or with you privately.
4. Remember not to use the past tense! Native Americans still practice their knowledge, language, and traditions today. If you are struggling with which verb tense to use, try replacing "Native Americans" with another group that isn't subjected to erasure in our current society to see if past or present verbs make sense.
  - A. "Lakota people used local native plants in spiritual ceremonies and as medicine in to heal ailments." In this case the practice is ongoing so switch out "used" for "use."
  - B. "Before the reintroduction of horses to the Americas, Native Americans used dogs to pull travois when they gathered supplies or traveled between camps." This is fine because it is referring to a time in history.

The examples I share are projects I've encountered while out and about in South Dakota. The tips I share are things I have learned along the way through my own trial, error, and learning!

- Emily Berry, Diversity, Outreach, and Culture Coordinator at the Sanford Underground Research Facility

# Officer Submissions



**SOCIETY  
FOR SCIENCE**

## 2023-2024 Invention Education Ambassadors

The Society for Science is pleased to announce that applications for the 2023-2024 Invention Education Ambassadors are open. This is the inaugural cohort for this opportunity, developed in partnership with The Lemelson Foundation to explore the intersection of student research and invention education. Four ambassadors will be chosen (two at the middle school level and two at the high school level).

Position responsibilities:

- Ambassadors will attend monthly meetings with the Society's Invention Education Fellow to develop resources, analyze educator feedback, create outreach plans, and report student research and invention education engagements undertaken.
- Ambassadors will serve as guides and sources of support for other educators interested in learning more about Invention Education and student research projects.
- Invention Education Ambassadors will attend and present at the appropriate grade level Research Teachers Conference, hosted by Society for Science. The [Middle School Research Teachers Conference](#) and [High School Research Teachers Conference](#) bring together research teachers of all experience levels to share best practices, troubleshoot challenges, and learn more about the Society for Science and STEM research competitions. They take place in Washington, DC, are all-expenses-paid, and are peer-led. The Middle School Research Teachers conference will take place July 21 – 23, 2023. The High School Research Teachers Conference will take place September 29 - October 1, 2023. Ambassadors will receive a stipend of \$1,000 for completion of this one-year assignment. Travel, meals, and lodging for the conferences are provided.

The application can be found [here](#).



Priority consideration will be given to those applications completed by **June 23, 2023**.



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***If you are interested in learning more about student research, this is a great opportunity. I have attended the High School Research Teachers Conference and came away with valuable tools and ideas.***

***Julie Olson, SDSTA newsletter co-editor***



# Officer Submissions

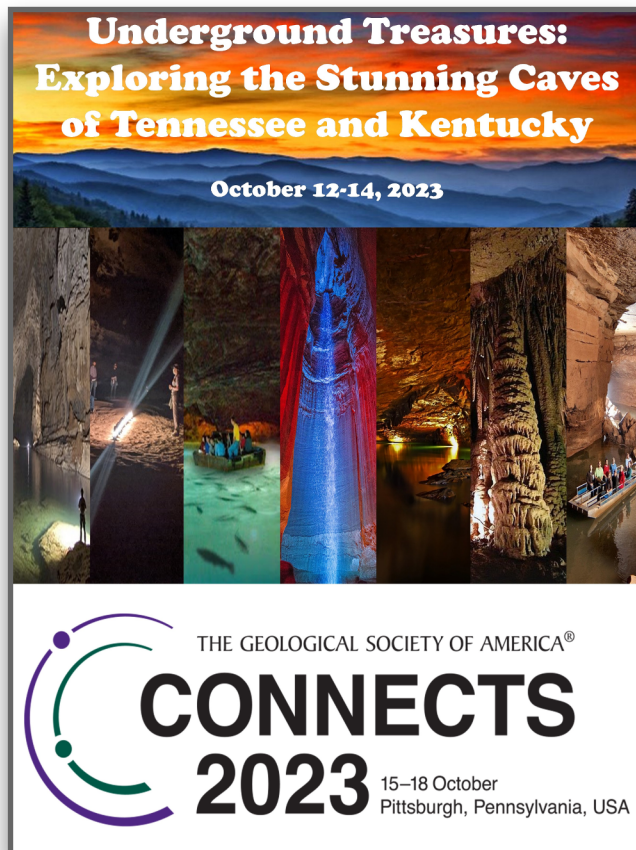
## Underground Treasures: Exploring the Stunning Caves of Tennessee and Kentucky

- Spencer Cody, SDSTA Treasurer

Join us on an exciting three-day adventure in discovering some of America's most remarkable underground geological wonders as we experience the caves of Tennessee and Kentucky. Day one will begin in Atlanta where we will load our 15-passenger van. Our first stop will take us deep into Lookout Mountain above Chattanooga to see the tallest and deepest underground waterfall in the United States, Ruby Falls. We will continue into the foothills of the Smoky Mountains to explore the Craighead Caverns cave system to see The Lost Sea, America's largest underground lake. Our final stop will take us to Tuckaleechee Caverns below Smoky Mountains National Park with its remarkable stadium-size "Big Room" of formations. We'll spend the night in Knoxville. Day two will take us up into Kentucky to Bowling Green's Lost River Cave for chert and limestone formations traversing the underground river via boat. Additionally, Lost River Cave has a remarkable blue hole formation that sinks into a deeper underground river. Next we will head up to Cave City to tour Crystal Onyx Cave. We will then head into Mammoth National Park to explore the remarkable formations of Great Onyx Cave on a lantern tour with lodging in Cave City. On day three, we will conclude our caving adventure in grand fashion with the Grand Historic Tour of Mammoth Cave to learn about the cave's amazing geological features and interesting history. After the tour we will head up to Pittsburgh to drop off field trip attendees at the convention center.

**Primary Leader Email Address:** [Spencer.Cody@k12.sd.us](mailto:Spencer.Cody@k12.sd.us)

Register at [Field Trips - Connects 2023 \(geosociety.org\)](https://www.geosociety.org/FieldTrips-Connects2023)



## iLEARN (Immersive Learning Experience and Rural Networking)

- Dr. Larry Browning, SDSU Science Liason

Sicangu Co and SDSU are excited to share that we will be facilitating the second annual iLEARN (Immersive Learning Experiences and Rural Networking) summer professional development for K-12 teachers this summer. The purpose of the iLEARN project is to *spark student interest in food & agriculture careers and support teachers to develop land-based, hands-on units that weave together Next Generation Science Standards and OSEU.*

The 5-day workshop will take place from July 24-28 at the Todd County Middle School in Mission, SD.

We will provide additional details and an agenda as we get closer to the event but in the meantime, please share this opportunity with your colleagues

and network. iLEARN participants will receive a daily stipend for attending the workshop. Participants will also be invited to develop unit plans and lesson plans to incorporate their learning into their classroom and will also be offered stipends for their planning time.


For more information and to register for the iLEARN Summer PD, please [click here](#).

1. **June 26-29:** Biotechnology/Genetics (SDSU; capacity 6): <https://tinyurl.com/mrxu7d7v>
2. **July 24-28:** Project-based STEM lessons for Teachers from Rosebud Reservation, Mission SD (capacity: 27): [://tinyurl.com/mssnp2r6hhttps](https://tinyurl.com/mssnp2r6hhttps)

# Officer Submissions

## Black Hills Park & Forest Education Association

- Jennifer Fowler, Middle School Liaison

As you looking to enhance your students' learning, take a look at the Black Hills Parks & Forest Association [BHPFA Education Hub!](#) 

This is an easy-to-navigate webpage for educators to access **placed-based environmental education programming, including field trips, distance learning programs, and curriculum** from our partner locations and other organizations in the Black Hills, South Dakota, and Nebraska.

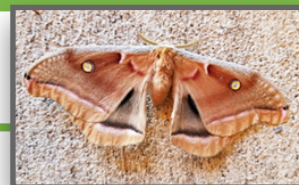


BLACK HILLS  
PARKS &  
FORESTS  
ASSOCIATION

## SEEK by iNaturalist App and Citizen Science - Jennifer Fowler, Middle School Liaison



Try the Seek app to identify flora and fauna you encounter! Be part of Citizen Science by uploading your sightings directly to iNaturalist.



## Project Learning Tree, Project WET, Project WILD, and Aquatic WILD

- Jennifer Fowler, Middle School Liaison



project **WET**  
WATER EDUCATION TODAY



Aquatic  
**WILD**<sup>TM</sup>

### Join us for in-person training.

**Who:** K-12 educators

**What:** Black Hills Science Explorations Workshop to participate and plan activities from the guides to use with your students

**When:** July 17-19

**Where:** The Nature Conservancy Whitney Preserve south of Hot Springs, SD

**Accommodations:** stay in the bunkhouse, or bring your tent/camper

**Credit:** Contact Hr Certs (or grad credit pending approval)

**Cost:** **Training and lodging are free, and you will receive newly revised copies of the activity guides!**

**Register Here:**



**More info:**

<https://blackhillsparks.org/education-resource-hub/teacher-trainings/>

Contact: Andrea Fountain [bhpf@blackhillsparks.org](mailto:bhpf@blackhillsparks.org)

# Resources from NSTA

## Engineering for the 3 Little Pigs - Teach Engineering (3-5)

The purpose of this activity is to demonstrate the importance of rocks, soils and minerals in engineering and how using the right material for the right job is important. The students build three different sand castles and test them for strength and resistance to weathering. Then, they discuss how the buildings are different and what engineers need to think about when using rocks, soils and minerals for construction.

This engineering curriculum aligns to Next Generation Science Standards (NGSS).



The three little pigs and their houses  
copyright

## Can You Copper Plate? - Try Engineering (6-8)

This lesson explores chemical engineering and how the processes of chemical plating and electroplating have impacted many industries. Students work in teams to copper plate a range of items using everyday materials.



- Learn about engineering design and redesign.
- Learn about chemical engineering.
- Learn how engineering can help solve society's challenges.
- Learn about teamwork and problem solving.



## Toxic Popcorn Design Challenge - Try Engineering (6-12)



You are a team of engineers challenged to save the city from toxic popcorn. A can of highly toxic popcorn has contaminated a circle of approximately 4 feet in diameter. The toxic area extends to the ceiling. If the toxic popcorn is not transferred to a safe container for decontamination within the hour, then it will destroy the entire city. It is up to the team to save the city!

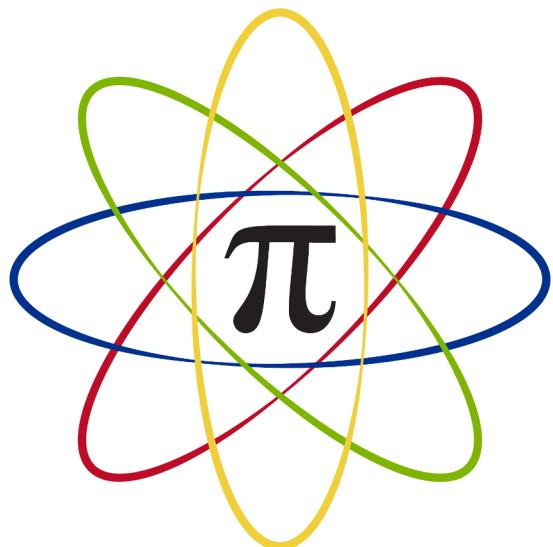


### Criteria

- No one may cross the plane of the circle with any part of the body
- No spills are allowed, or the popcorn will explode
- The popcorn and containers cannot cross the plane of the circle (only the ropes & tire tube may cross)

# Professional Development

It's time to register for the conference.



**SD STEM Ed**  
**February 1- 3**

**2024**

Early Bird June 1st - December 15th		
	1 Day Registration	2 Day Registration
Member	\$100.00	\$125.00
Student	\$50.00	\$75.00
Non-member	\$150.00	\$175.00
Pre-Registration December 16th - January 15th		
Payment must be postmarked by 1/15 or online payment completed by 1/15 or you will be "bumped" to the next tier.		
Member	\$150.00	\$175
Student	\$50.00	\$75.00
Non-member	\$200.00	\$225.00
On-site Registration		
Member	\$200.00	\$225.00
Student	\$70.00	\$80.00
Non-member	\$250.00	\$275.00

## On-Demand PD for Chemistry Teachers

The courses are designed to give you an in-depth understanding of key concepts in teaching chemistry. Each course can be completed at your own pace, giving you time to try out new strategies and activities in your classroom before progressing further.

The Royal Society of Chemistry has made all online on-demand PD courses free until **August 31st, 2023**. Some of the courses include:

- Quantitative Chemistry
- Developing and Using Models
- Energy and Change
- Redox
- Analytical Chemistry



**ROYAL SOCIETY  
OF CHEMISTRY**

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**UPCOMING EVENTS**

**July 8**

**Neutrino Day**

**September 12**

**Newsletter Submissions due**

Any member may submit lessons, ideas, links...

**October 31**

**Speaker Proposals Due**

for the SD STEM Ed Conference

**February 1-3, 2024**

**SD STEM Ed Conference**

Huron, SD

The SDSTA Newsletter is published four times a year and is e-mailed to 107 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).



Mail to:

Spencer Cody, SDSTA Treasurer  
342 N. Sunset Dr.

Mina, SD 57451

**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 \_\_\_\_\_