

Nebraska Science News



Nebraska Academy of Sciences



Nebraska Association of Teachers of Science

Serving Scientists and Science Educators Across the State of Nebraska

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FROM THE NAS PRESIDENT'S DESK

As the weather begins to grow colder, many of us look forward to the relaxation and celebration of the holiday season. The end of the year is also a time to reflect and give thanks for both the good things in life and the trials experienced that make us stronger. For many Nebraskans, 2019 was a very challenging year. Nebraska and neighboring states experienced the Great Flood of 2019. Throughout the year, flooding occurred several times along the Missouri River and its tributaries. Widespread flooding this past spring also occurred in the eastern half of the state as a result of saturated soil, rain, and the rapid melting of snow due to a 24-hour temperature increase. The resulting run-off inundated rivers and streams flooding farms, ranches, and communities. In July, Central Nebraska experienced localized flooding with as much as 13 inches of rain falling within hours in some communities. The 2019 floods resulted in hundreds of people losing their homes, billions of dollars of property damage, hundreds of thousands of acres being taken out of agriculture production, thousands of cattle and other livestock lost, and at least 5 deaths. Many months later you can still see scars left on both urban and rural landscapes. In spite of this, farmers planted and harvested their crops where they were not predicted to. Buildings were repaired. Local and outside volunteers pitched in to begin healing communities. This progress in the face of adversity is no surprise. Nebraskan's are hard-working and resilient. Nebraskans are strong.

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NATS PRESIDENT NEWS and VIEWS

Happy fall (winter?) from Grand Island! As we move into November, let's reflect on the awesome opportunities made available to educators by the Nebraska Association of Teachers of Science. It seems like yesterday it was summer and NATS and NDE were bringing teachers to Grand Island for OpenSciEd professional learning. During this five-day intensive workshop on storylines, teachers grew their understanding, not only of the curriculum supports and features, but amazing high-quality instructional materials to take back to their classrooms. This group of teachers will have an opportunity for more professional learning this winter to build on the understanding they gained during the summer and to experience new units. Now, if you missed the OpenSciEd summer session, we have another professional learning opportunity called "NGSSsensmakers" coming up on February 25-28, 2020, in Grand Island. It will be open for 60 teachers and we will have a hotel block. Make sure to go to our calendar on our webpage for all the information and other upcoming professional development opportunities from NDE, NATS, and all the ESUs!

In September we hosted the third annual joint NATS/NATM Fall Conference in Kearney even after the city experienced widespread flooding. Somehow, the city of Kearney, and its residents, pulled together and recovered. We were so fortunate to be able to continue with hosting our professional learning. Thank you, Kearney!

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The holiday season is also a time to look ahead with a renewed focus and energy on improving ourselves. Many of us plan to be better colleagues, friends, or family members. Most of us resolve to lose weight or become more fit. How many of us resolve to be better scientists or science educators? One thing that is becoming increasingly important as we face complex challenges like climate change, is to become better communicators of our science. Fortunately, most US adults have trust in scientists. A recent [Pew Research Center Survey](#) shows that 86% of US adults have confidence that scientists act in the public’s interest with over 31% having a great deal of confidence. This has improved by 14% from just 3 years ago. As the causes of climate change become more undeniable, it is up to scientists to help the public understand how our work can be a part of the solution. Improving our science communication skills is not an easy task. Most of us need a little help. One way to get started is to attend the 2020 Spring’s SciComm Conference which will be held at the University of Nebraska-Lincoln campus (date TBA). This multi-day, national conference, is for students, staff, and faculty from all academic institutions. The conference program focuses on innovative science communication workshops, discussions, and presentations. Registration is reasonably priced. Even better, it is in our backyard. I have attended this event several times and I always learn something new about communicating and teaching science. I encourage everyone to check out this conference. Keep an eye on the UNL website for more details to come.

Another way that you can become more impactful locally is to get engaged with the Nebraska Academy of Sciences. We are looking for more members to share the gifts of their science at our annual Spring meeting on April 17, 2020. Is there a talk you can share? Is there a workshop that you can give at the NAS meeting to help students or faculty colleagues become better scientists, educators, or communicators? Please contact me, dgolick2@unl.edu, if you would like to share your science gifts at this meeting.

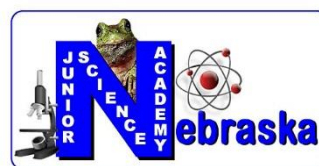
As we close 2019, please take time to celebrate, rest, and reflect. I look forward to hearing from you on ways that you become more impactful in 2020.

Doug Golick, NAS President
University of Nebraska-Lincoln

On opening night of the conference, we had a share-a-thon, where several educators around the state were able to network and share ideas with others; various vendors were available; we featured a NASA social and a NASA speaker, Karla Clark; and after all of this, we had math and science trivia! On Friday, we had several speakers and sessions for administration, EL, elementary math and science, and 3D teaching and learning. Our keynote speaker Friday was NGSS writer Okhee Lee, who spoke about the vision of academically rigorous science learning with all students, in an effort to help them prepare for college and careers in STEM fields. This vision coincides with the rapidly growing student diversity in the nation. This is why "all standards, all students" is so key. On Saturday, we had a great mix of presenters and workshops that focused on numerous science topics and instructional practices.

As the NGSS begin to take hold in schools and classrooms across the nation, it is critically important that science educators are prepared for classroom implementation and take advantage of professional development. If traveling isn’t possible, make sure to take advantage of MINK & CO webinar. This webinar series launched on Thursday, October 24th and focused on classroom assessment and English Learners and Science. This webinar, and last years’ sessions of MINK, are all recorded. To register, go on the NDE Science Education website under professional Learning Opportunities.

Anya Covarrubias, NATS President
Grand Island Public Schools



NJAS NEWS

Science fair is designed to promote science and technology across America by providing incentives for students to apply creativity and critical thought to solutions of science, technology, engineering, and mathematics (STEM). It offers an opportunity for students to meet, exchange ideas, and discuss career possibilities with scientists and engineers from colleges and industries. Science fairs have received even political notice when President Barack Obama mentioned them in his State of the Union Address on January 25, 2011; “We need to teach our kids that it’s not just the winner of the Super Bowl who deserves to be celebrated, but the winner of the science fair.”

Many students who showed interest in the natural world since childhood proudly recalled winning a science fair. If students follow the scientific method as they carry out

2020 EARTH EXPEDITIONS GRADUATE COURSES

Earth Expeditions can build toward the Global Field Program (GFP), a master's degree that combines summer field courses worldwide with web learning communities so that students can complete the GFP master's part-time from anywhere in the United States or abroad.

Project Dragonfly also offers the Advanced Inquiry Program (AIP) master's degree that combines web instruction from Miami University with experiential learning and field study through several AIP Master Institutions in the U.S. Applications for Miami's 2020 cohorts are being accepted now with place-based experiences provided at zoos and botanical gardens in Chicago, Cincinnati, Cleveland, Denver, New York, San Diego, Seattle, and St. Louis. [Click here](#) to learn more!

THE BLACK HOLE PIRE PROJECT

The Black Hole PIRE project is offering a live course taught by two scientists and members of the Event Horizon Telescope (EHT), the global collaboration behind the first-ever black hole image announced in April 2019. This course will be provided free of charge to classrooms (grades 8-12) around the country. This presentation will introduce the EHT, explain the motivation for taking an image of a black hole, and highlight the technological and algorithmic advances required to obtain the image. This will be offered on November 21, 2019.

In addition to the live course, the EHT scientists will provide four corresponding lesson plans and activities that focus on teaching Kepler's laws, developing intuition for gravitation and planetary orbits, and data analysis. These complete lessons plans are completely optional but suggested for classroom instruction the three days prior to the live talk (i.e. Monday-Wednesday). The fourth lesson plan provides the opportunity for students to apply what they have learned. This will be a hands-on group project where students will use real astronomical data to measure the mass of the black hole at the center of our galaxy. [Click here](#) to register!

UNITED STATES BIOLYMPIAD

This individual competition stimulates student's intellectual curiosity and develops their critical thinking skills in laboratory skills and biological reasoning to propel them to careers of excellence and leadership in science and technology.

experiments for their science fair projects, it will help them understand scientific concepts, and with proper guidance from their teachers, it will lead them to a lasting interest in both science and engineering. Science fair involves hands-on research and learning. Students demonstrate the ability to identify a problem, formulate a hypothesis, determine a procedure, gather data, interpret the results, and draw conclusions. Science fairs can be instrumental in making science make sense to children who may otherwise miss the opportunity.

Students who participate in science fairs could develop an interest in science that goes well beyond a motivation gratified only by prizes or rewards. Each participant gains an interest in the fairs and a sense of self-efficacy. Also, students find gratification, achievement, and reward through participation. They like both the prizes and the feeling that their ideas are well received by others. Moreover, students participate in science fairs do so for the possibility of traveling, meeting and sharing their ideas with other people. Finally, the participants acquired learning strategies.

Given that science fairs promote student-led project work, which tends to be de-emphasized in schools, they may be viewed as a positive educational phenomenon. Although research reports about science fairs are relatively rare, one can imagine other important learning outcomes from participation in them, such as deeper understanding of subject matter knowledge, awareness of some characteristics of science, the competitive nature of science, and technical skills such as measurement techniques.

Students can gain significantly in six specific theme areas: scientific research and design, oral and written communication, career direction, lifelong connections, personal satisfaction, and financial gain. It can be concluded that the skills and experience acquired through science research and science fair competition provides students with real life learning opportunities and critical thinking skills that they can apply immediately and in their future studies and life experiences

Randall Lienemann
NJAS President

DATES TO REMEMBER

Click on the date below to learn more

[PIE Grant 1st Quarter Application Deadline – January 6, 2020](#)
[2020 NJAS State Competition – April 16, 2020](#)
[2020 NAS Annual Spring Meeting – April 17, 2020](#)

For less than the cost of an individual AP exam, an unlimited number of students in a participating school can have access to wealth of biological tools and resources, and have the chance to challenge themselves against students across the USA and the World. [Click here](#) to learn more!

PhysicsQuest 2019

On this year's quest, students will discover Dr. Chien-Shiung Wu's important contributions to physics, and complete four experiments to learn about:

- Thermal energy and equilibrium, using hot and cold water
- Exothermic and endothermic reactions, using steel wool and vinegar
- Thermal insulating properties, using thermal paper
- Freezing and melting points, using ice, salt, and sugar

Please note: PhysicsQuest kits are limited in quantity and available on a first-come, first-served basis. You will be notified by email if you will receive a kit, or if you will be added to the waitlist and contacted next year. [Click here](#) to register!

PIE GRANTS REPORT

NAS announced that it will receive \$57,600 from the Nebraska Environmental Trust for the "Nebraska Environmental Public Information and Education Minigrant Program". The Trust Board announced funding for the project at its meeting on April 4, 2019 in Lincoln. The project is one of the 117 projects receiving \$19,501,444 in grant awards from the Nebraska Environmental Trust this year.

The Nebraska Environmental Public Information and Education Minigrant Program will award Minigrants of up to \$3,000 each, to support the presentation and dissemination of information and perspectives that will stimulate enhanced environmental stewardship in any category eligible for Nebraska Environmental Trust (NET) funding. These categories are habitat, surface and ground water, waste management, air quality, and soil management. The grants seek to expand dialogue on important current conservation topics and to provide information on emerging or highly useful conservation methods. All Nebraska individuals, private organizations, and public entities are eligible to apply for these funds. This program will be administered by the Nebraska Academy of Sciences.

The Nebraska Legislature created the Nebraska Environmental Trust in 1992. Using revenue from the Nebraska Lottery, the Trust has provided over \$305 million

in grants to over 2,200 projects across the state. Anyone – citizens, organizations, communities, farmers and businesses – can apply for funding to protect habitat, improve water quality and establish recycling programs in Nebraska. The Nebraska Environmental Trust works to preserve, protect and restore our natural resources for future generations. <http://www.environmentaltrust.org/>

Six fourth quarter 2019 PIE grant applications were received and processed in October. Applicants include the Habitat for Humanity of Omaha – Habitat Restore Deconstruction Program Outreach; Audubon Nebraska – Audubon's Nebraska Crane Festival; Izaak Walton League of America – Nebraska Invasive Species Awareness Project; Council for Resilience Education – Council for Resilience Multimedia Education and Outreach Projects; Skutt Catholic High School – Origins of Nebraska Populations of Invasive Japanese Beetles; and Lee G. Simmons Conservation Park and Wildlife Safari – Resident Amphibian Stewardship Project (RASP). Recipients will be selected in December.

First quarter 2020 applications are due January 6, 2020.

Grant forms and information can be found on our website by [CLICKING HERE](#).



The Nebraska Science News is a publication of the Nebraska Academy of Sciences, a private foundation associated with the American Association for the Advancement of Science.
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