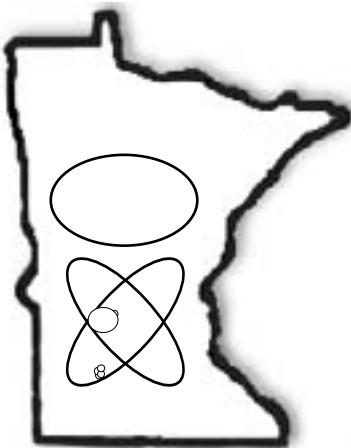




MnSTA

Newsletter

Volume 78 No.1 A Quarterly Publication of the Minnesota Science Teachers Association Inc. Fall 2026

MnCOSE Coming Soon!

MnCOSE 2026 is just around the corner! This year, we are excited to bring back a keynote speaker to the event!

We hope to see you at MN State, Mankato on Friday, Nov 20th, and Saturday, Nov 21st. Our two-day event is for science teachers of all levels, from pre-K to high school and into college. Educators across Minnesota are now seeing the first round of assessment results from implementing the 2019 standards. Our focus this year will be on Evaluating Science Learning, analyzing where we have come from and where we are headed. Come to learn and come to share what the process looks like in your world.

We'll start the event Thursday night with an informal reception. Come when you can and relax with friends new and old. On Friday and Saturday, MnCOSE26 takes place at the Centennial Student Union at MSU, just a short trip from our conference hotels. Easy, close parking on campus is included in your registration. All of our sessions, exhibitors, and meals will take place in this one convenient location.

After a spectacular showing from all of you at NSTA-Minneapolis in 2025, we took in some feedback and are bringing you a phenomenal Keynote Speaker to start your conference. Our keynote speaker, Dr. Selin Akgün, will highlight ways that we can all evaluate science learning through assessment, bringing in the big question of how AI fits into education and assessment. Following the keynote speaker, we'll offer FIVE presentation sessions on Friday and another THREE sessions on Saturday morning. You'll be able to engage in this mix of eight general sessions on a variety of science topics as well as several local field trip opportunities. Stick around Saturday, whether for sessions, local tours, or special workshops on

indigenous science, the geology of the area, ESTEP, or physics with GO4ST8.

Also enjoy all the time with colleagues and exhibitors you've come to expect, during an extended morning break and 70-minute lunch. As always, many exhibitors will also present sessions to let you dig deeper into their offerings. We already have great exhibitors lining up to join us and share their expertise. Our vendors include both commercial providers of educational tools and non-profit organizations to serve you.

We'll take advantage of all Mankato has to offer, from the on-site experiences with MSU professors to the rich indigenous science the area has to offer. Friday will culminate with our annual meeting and celebration in the BullPen at the Centennial Student Union at MSU, featuring bowling, pool, foosball, and more alongside food and drink!

Details about registration and lodging are available on our website at www.mnsta.org.

The 2026 MnCOSE conference, centered around the theme, "Evaluating Science Learning: Where We've Been and Where We're Going," focuses on modern assessment practices, encouraging attendees to move beyond traditional written tests to explore a balance of formative and summative evaluations.

This year, we are bringing in a fantastic keynote speaker, Dr. Selin Akgün. Her talk will center on her work in AI and assessment in science (portions of which have been featured as part of an NSTA Professional Learning Institute).

Please join us on Friday, November 20th, at 9 am at Minnesota State University, Mankato, to hear her amazing keynote address!

See her photo and biography on page 7.

President's Message- Missie Olson



Greetings MnSTA Members-

For most of us, fall is a busy time of the year, with the excitement and stress of the new school year. Yet, with the changing seasons, I also find it is a time for reflection. On a recent hike, while taking pictures, I was interested in viewing the environment at many scales, from the whole scene to close-up. The individual parts are interesting and beautiful, but are influenced by the connections of the greater system. These views made me think about my classroom; I have been reflecting on implementing the 3D standards and how best to evaluate them. Just as in nature, individuals matter, and assessment should capture close-up views of students' growth in all three dimensions; however, assessing the whole system of implementation at the classroom, school, and district level can also create a clearer picture of implementation success and how all parts are connected.

How to assess at all levels, from students to the district system, has been on many people's minds recently since most schools have implemented the three-dimensional standards for several years. It is not an easy question, with a one-size-fits-all answer. Therefore, discussions and collaboration on assessment can be extremely valuable, and MnSTA has made this a focus of activities this school year. As we explore the cross-cutting concepts in the Making Sense of Science: Cutting Across the Third Dimension virtual series, assessment will be included as a key concept. We will also host additional webinars

with assessment as the primary theme. Additionally, the theme for MnCOSE (November 20-21, 2026) is Evaluating Science Learning: Where We've Been and Where We're Going, again highlighting assessment. I hope many members can participate in these professional development activities and bring their voices and experiences to the discussion of assessment.

On another note, I would like to thank all members who have provided input on our strategic plan, which will guide our work for the next 10 years. It was important that our members' voices be heard throughout the strategic plan development process. The June survey responses and the September focus groups have been crucial in guiding the plan's development. Though we have not completely finalized the strategic plan, the plan has been thoughtfully developed by the MnSTA Board of Directors with the guidance of Doug Paulson. We look forward to sharing highlights of the plan at MnCOSE and the final plan in the spring.

MnSTA is an amazing organization made possible by its members! Thank you for all you do for the organization, but most importantly, thank you for all your work in science education!

I hope to see you all at MnCOSE!
Missie Olson, Ph.D.



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Our featured teacher for this issue of the MnSTA newsletter is Leah Yoemans. Leah is currently a K-5 STEM Specialist for Lakeville Area Schools at Oak Hills Elementary. She also teaches Computer Science to grades 6-8 at Lakeville Online Academy. She has been a STEM Specialist since the position was created 12 years ago in Lakeville Schools, and she is proud of her role in building and continuously improving her district's STEM program. Before this job, she was a Science Specialist and first-grade teacher at St. Paul Schools.

As a STEM Specialist, she is able to teach all of the students in her school, science as well as coding, robotics, and engineering lessons. Her favorite lessons are the more in-depth and iterative engineering design projects which integrate all areas of learning, empower students to solve real-world problems, and inspire them to investigate STEM careers. She loves to see her students driven by curiosity, take ownership of their learning, and learn how to collaborate in teams. She also enjoys teaching computer science to middle school students online. She loves the flexibility of this learning environment and the challenge of engaging students in new ways. She especially loves seeing the struggle of learning to code evolve into super creative digital designs.

This summer, She was honored to be chosen to participate in the Lake Superior Shipboard Science Immersion program, which is a week-long professional learning program organized by the Center for Great Lakes Literacy, the U.S. EPA, and the Great Lakes Sea Grant Network. She spent a week on the research vessel Lake Guardian and worked alongside scientists and educators on scientific investigations, where she learned valuable lessons about Lake Superior science, investigative methods, and stewardship. The Lake Guardian is stocked with marine research tools for sampling and multiple science labs, which allowed participants to investigate larval fish, zooplankton, Diporeia, Mysis, photochemistry, and microplastics in Lake Superior. They took samples during the day and night along several transects in Lake Superior, which gave them several opportunities to get hands-on with the different experiments. They spent one day at Isle Royale National Park exploring and learning with perfect weather. Participants also participated in several learning activities aboard the ship and at the Great Lakes Aquarium to develop pedagogical best practices, which she is excited to share with her students! She states, "I am grateful for the connections I made with other

educators from the Great Lakes region. This was an unforgettable experience that made me feel inspired and empowered as a learner, a scientist, and an educator!"

When she is not teaching, she loves spending time with her family, making art, and starting DIY projects. She especially enjoys outdoor activities like hiking and gardening. She also likes to volunteer with service projects that educate people and advocate for invasive species management and native plantings in her community. Her hobbies reflect what she values as an educator: curiosity, observation, and lifelong learning.

Professionally, she is a member of the National Science Teaching Association (NSTA), Minnesota Science Teachers Association (MnSTA), and Minnesota Association for Environmental Education (MAEE).

Her principal, Dr. Wade Labatte states, "Leah is an innovative teacher and challenges her students to push themselves intellectually and collaboratively. She is a leader in her department with a "can do" attitude. She does not shy away from leadership opportunities and finds way to provide meaningful and creative instructional strategies."



Delicate procedures and lab tools were used to count, measure, and extract gut contents from cisco larvae.



This article was reprinted from the September-October, 2026 issue of the Minnesota Conservation Volunteer. By Joe Spring.

Chemist Melissa Maurer-Jones is on a quest to map Minnesota's microplastics. The University of Minnesota Duluth professor runs a lab studying two things. First, her team is looking into how different environmental stressors, like sunlight, change and break down plastics. Second, they are investigating how abundant microplastics—plastics less than 5 millimeters in length—are in Minnesota's natural environment. In one study, Maurer-Jones and colleagues found that plastics in the St. Louis Estuary were bigger and more diverse than those in Lake Superior. "All of this makes sense because [the harbor] is closer to where things are being deposited," she says. "When you get out into the open lake, there's more time for the plastics to break down." Maurer-Jones wants a comprehensive picture of microplastics in Minnesota. Her small team is limited in the sampling it can do in our lakes, streams, and rivers. But roughly four years ago, the chemist had an idea. She could build a kit and distribute it to middle school and high school students so they could sample water bodies, count the microplastics, and load their results into what will become an online public database. The project will provide a detailed look at microplastics' presence in time and place across the state. We called her up to learn more.

Q | How does the project work?

High school and middle school classrooms across the state can request to borrow kits, follow protocols, and get outside. Right now, we're just looking for volunteer classrooms to continue to deploy these kits. The ultimate goal is to develop a publicly accessible database that will house all of the protocols and information for teachers or other citizens. That database will be up and running around the end of 2027.

Q | What's in a kit?

Most importantly there's a sieve stack we use to collect particles out of water. There's also a bucket. Participants collect 10 buckets of water and pass them through sieves. They get the particles off the sieves and onto a filter. They use digital USB microscopes to look at the filters under a microscope and count particles.

Q | Why did you engage students in the project?

First off, there's a lot of evidence that if you have trained scientists leading citizen science, you

tend to get more accurate results. By going through classrooms, we have teachers trained to be scientists. Second, by having many students in one classroom doing measurements, we're getting replicates. Third, a lot of evidence exists in the education literature that if you get kids doing things in the environment, they build a sense of stewardship and a sense of curiosity about the world around them.

Q | How big of a problem are microplastics in Minnesota?

Microplastics are everywhere. We use a lot of plastics, from the clothes we wear to the chairs we sit on to street sweepers and snow removers with plastic in their bristles. In Minnesota, we're seeing microplastics in all the lakes tested. They're not as heavily impacted as some more populous regions of the world. So that's a positive. Now, the question of, "How much microplastics is bad"—we don't know yet. And so there are no policies in place yet in terms of regulatory levels or limits or threshold.

Q | What can we say about the impacts of microplastics?

Just like big plastics can cause turtles to have full stomachs and not eat, microplastics can do the same thing for small filter feeders. We're finding that smaller size ranges, nanoplastics, have the potential to cross biological barriers. Some harm can come from all the things that plastics can carry. Plastics are hydrophobic oil-like particles able to pick up other pollutants, including heavy metals or other organic pollutants. And plastics are a complex mixture with additives and pigments, and they can leach out those additives and pigments. They also seem to persist in the environment.

Q | How will knowing the amount of plastics help us?

If we understand how much microplastics are in our water bodies and, importantly, how they might change given different times of year or different years, we can better understand what's causing the pollution to happen and potentially mitigate some of that. For example, perhaps there's an opportunity to put a filtration system in a stormwater system that would help pull out some of the microplastics.

Microplastics....continued on the next page.

Microplastics....continued from previous page.
Q | What should a Minnesotan concerned about microplastics do?

Plastics serve an important purpose. We use them in a lot of ways in our day-to-day life—for healthcare items, for insulation around cabling. I don’t want to demonize plastic. My advice and encouragement is try to use fewer things that include single-use plastic. Getting involved in cleanups can be really important. Lastly, it’s important to continue conversations on a local government level. Even a small nominal nickel charge for singleuse plastic bags seems to encourage people to choose reusable options when they have that opportunity.



Melissa Maurer-Jones and UMD chemistry graduate student Abimbolalge sample for microplastics.

**Minnesota Department of Education
Minnesota Science Leaders Network**

MDE is partnering with MnSTA to host the Minnesota Science Leaders Network for 2026-2027. If you are interested in joining the Minnesota Science Leaders Network, please sign up for our [email list](#). Those who sign up will receive information from both MDE and MnSTA. There are two opportunities to participate in the Minnesota Science Leaders Network for 2026-2027. Minnesota Science Leaders Meetings for Districts and Organizations will take place on Thursday mornings from 9-10:30am. Minnesota Science Leaders Meetings for Classroom Teachers will take place from

3-4pm. Our goal in providing additional meeting times is to provide more opportunities for all science leaders in Minnesota. To learn more, sign up for our [email list](#) or reach directly out to Angela Kolonich, MDE Science specialist at angela.kolonich@state.mn.us.

Performance Level Descriptors
Districts and teachers have reported that the **Science MCA-IV Performance Level Descriptors (PLD)** have been a useful tool for supporting analysis of curriculum and instruction, informing grading practices, and designing professional development. This summer, we convened development committees for Science PLDs in grades K-2, and High School Earth and Space Science, Chemistry and Physics to complete PLDs in all grade levels and subject areas. The initial drafts were completed in July 2026, and there is still more work to do. Our timeline is to release science PLDs in K-2, and High School Earth and Space Science, Chemistry and Physics in Summer or Fall 2027.

Science Licensing Update from the Professional Educator Licensing and Standards Board (PELSB)

The Professional Educator Licensing and Standards Board (PELSB) has determined that science teacher licenses in grades 5 through 12 must be streamlined from four licenses into one (or two) licenses. To implement this mandate, the board will convene a writing group to draft rule revisions to Minnesota teacher education and licensure standards in science. The writing group will meet online from September 2026 through January 2027 to revise current Minnesota science teacher education and licensure standards and draft Board-mandated changes to these rules. The rule drafts will be presented to the Board by February 2027. More information is available on the PELSB Science Teacher Licensure Rulemaking page



PELSB is considering changes to science licenses

The Professional Education Licensing and Standards Board (PELSB) is reviewing the license categories for secondary science teachers. At their May board meeting, they passed a motion to establish a working group to develop rules (standards) for up to two secondary science licenses and report back to the board on their progress. During the board discussions, members discussed having either a general science 5-12 license or a combination of a physical science 5-12 and a life sciences 5-12 license.

Any change in the license structure would take several years to implement. Teachers who have a current science license will retain that license and will not have to make any changes. Background: Last fall, PELSB convened a working group to research issues related to science licenses and to make recommendations. The working group of 15 people included teachers, administrators, and higher education. At least six were MnSTA members. They developed a pros-and-cons document for PELSB, considering several licensure options. For high school, they examined keeping the same 4 license areas, reducing them to 2, or adopting a general science license. The working group recommended keeping the same license categories. For middle school, the working group recommended:

- Extending science licensure to Grades 5-12
- Adding 6th grade to all existing 7-12 Earth & Space Science licenses
- Adding 9th grade Earth Science to all current 5-8 general science licenses
- Allowing 7-12 and 9-12 licensed science teachers to test into the 5-8 general science license.

So far, the PELSB board has not acted on the Middle School recommendations.

The science working group report and slides from the April and May board meetings are available on the PELSB board meetings site. Send comments to pelsb@state.mn.us. Send questions and suggestions for MnSTA leadership actions to president@mnsta.org.

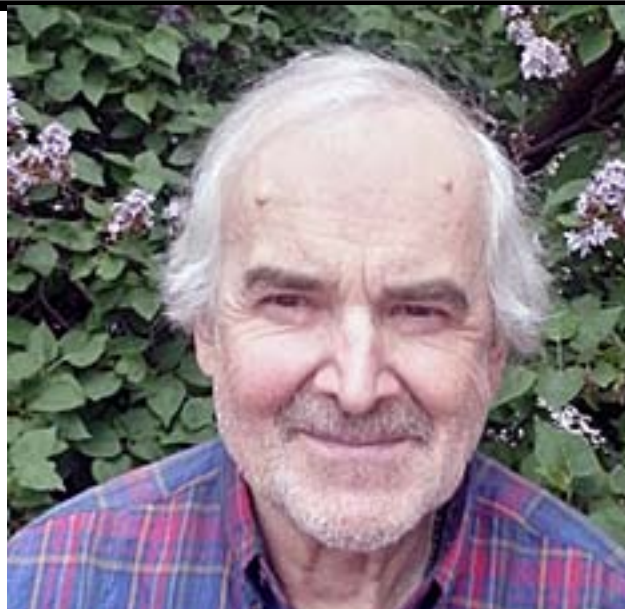
North American Monarch Institute
The North American Monarch Institute is a self-paced, four-week professional development course (Oct 12–Nov 8, 2026) from the Monarch Joint Venture for K-12 teachers and non-formal educators, covering monarch life cycle, migration, threats, and conservation through videos, activities, and the Monarchs and More curriculum. Participants complete weekly assignments and a final implementation plan to earn a 7-hour certificate, with 2 optional live Zoom Q&A sessions.
<https://learn.monarchjointventure.org/courses/North-American-Monarch-Institute-Fall-2026>

Dr. Selin Akgün, MnCOSE keynote speaker continued from page 1.



Dr. Akgün is an Assistant Professor in Science Education at the University of Minnesota-Twin Cities, where she teaches elementary methods and other courses. She earned her PhD in Curriculum, Instruction, and Teacher Education from Michigan State University and previously worked as a science teacher in both formal and informal settings in Türkiye. In addition to her AI and assessment work, Dr. Akgün has research interests in equity and justice-oriented perspectives in teaching and learning, and she is the Principal Investigator for the \$5 million, five-year grant awarded for the National STEM Teacher Corps Pilot Program: Midwest Alliance for Rural Elementary Science, in conjunction with the U’s Dr. Gillian Roehrig and researchers in Kansas and Iowa.

In Remembrance of Ed Hessler



Ed Hessler, the former MnSTA Executive Secretary, died June 26, 2026 in Roseville. He served MnSTA from 1996 to 2018, with significant contributions to the operations of the organization, the board and the annual conference. Each edition of the MnSTA newsletter featured an article by Ed, often focusing on nature reflections and environmental education. Ed also consulted for Hamline University's Center for Global Environmental Education where he contributed to outreach and professional development programs. Ed was well known for his wit, his poetry quotes, and his wide knowledge from his extensive reading. His influence was often delivered by probing questions. He will be greatly missed by the many educators who were influenced by him. Here is the link to his obituary in the [Star Tribune](#). Here are some remembrances from present and past board members and friends.

From Eric Koser, MnSTA Webmaster:

The Questions He Asked

Ed's questions were rarely simple or purely transactional. They were rooted in genuine scientific curiosity and a deep care for the art of teaching. He frequently asked:

- * Probing Pedagogical Questions: How can we help students notice the world more deeply? What makes a particular scientific concept stick?
- * Inquiries of Wonder: Asking why a natural phenomenon occurs or highlighting an overlooked detail in a recent study, invite the reader to look closer.
- * Supportive Check-ins: Asking how fellow edu-

cators were faring, checking on projects, and ensuring colleagues felt supported and seen.

The Character of His Wit

Ed possessed a dry, gentle, and subtly playful wit. It was never sharp or self-serving; rather, it was observational and understated. He had a knack for finding quiet humor in the absurdities of bureaucracy, the quirks of human behavior, or the unpredictable nature of science education. His humor was the kind that brought a quiet smile rather than a boisterous laugh—a wry nod to the shared human experience.

His Perspective on Sharing Poetry

Ed didn't share poetry as an abstract or elite academic exercise. To Ed, poetry was a field guide to observation.

* He viewed poetry as an essential tool for slowing down, practicing deep attention, and connecting emotional truth with scientific observation.

* By sharing poems—especially on Fridays—he offered a rhythmic pause in a busy week, reminding readers that science and art are merely two different languages describing the exact same wondrous universe.

The Overall Perception of Ed

Reading Ed's written words leaves the impression of a modern naturalist and a consummate "educator's educator." He comes across as deeply cultured yet completely unpretentious, incredibly well-read, and extraordinarily generous with his time and knowledge. He was a quiet anchor: someone who didn't seek the spotlight, but whose presence steadily illuminated the work of everyone around him.

Core Characteristics

- Incurably Curious: Driven by an endless desire to learn, observe, and share discoveries about the natural world.

- * Understated Humor: Quick with a dry, warm, and gentle wit that lightened heavy days without trivializing the work.

- * Bridge-BUILDER: Seamlessly connected hard science, environmental ethics, literature, and human empathy.

- * Generous Mentor: Consistently elevated others, offering encouragement, thoughtful feedback, and quiet recognition.

- * Attentive Observer: Noticed the small things—in an ecosystem, in a poem, or in a colleague's effort—and treated them with care.

A Short Narrative: The Quiet Lighthouse

To receive an email from Ed Hessler was to be

In Remembrance of Ed Hessler

invited into a larger, more thoughtful conversation with the world. Whether he was attaching a carefully selected poem, reflecting on a piece of science news, or weighing in on association business, his words always carried a distinct cadence—unhurried, precise, and warm. Ed functioned as a quiet lighthouse for the science education community. In a profession that often moves at a breakneck pace, Ed insisted on taking time to notice things: the first frost, the structure of a bird's wing, the precise turn of phrase in a stanza, or the quiet dedication of a classroom teacher. His weekly rhythm of sharing poetry wasn't just a routine; it was a gift of perspective. Through his emails and writing, Ed reminded everyone that teaching science isn't just about imparting facts—it is about cultivating reverence, curiosity, and kindness. Ed was both the operational backbone of MnSTA and its unofficial poet laureate. He handled the unglamorous work of taking minutes, tracking policies, and guiding leadership transitions with quiet reliability. Yet, attached to those very same formal meeting minutes, you would inevitably find a poem by Mary Oliver, Bruce Weigl, or Robert Gibb—a gentle reminder to step back from the mechanics of the organization and appreciate the natural world outside the window. Whether he was teasing himself about keeping up with technology or dropping a thoughtful verse into a Friday update, Ed's correspondence reflected a simple philosophy: stay curious about how things work, care for the people around you, and always leave room to notice the world.

Ed, from a 2018 newsletter article upon his retirement from MnSTA on the value of life membership, as quoted by Michelle Koomen:

The late Wilma Pearl Mankiller, the first female principal chief of the Cherokee nation, once said this about education. "I don't think anybody anywhere can talk about the future of their people or of an organization without talking about education. Whoever controls the education of our children controls our future." It is a messy journey consisting of surprises, satisfactions, challenges, frustrations (sometimes), possibilities, and the hope and promise seen in each student.

There are many ways to think about science education. It is captured these days in an acronym--STEM. A professor in the Department of Chemistry at Carleton College once suggested to me that it is one of the liberal arts, an important part of a general education. This includes the usual reasons for learning science: employment prospects, citizenship, the

consideration of enduring questions of human meaning, the enhancement of childhood but also as so important that a general education would be incomplete with it (or them if we use STEM). I like to think that keeping in the back of our heads that we have members who are life members helps us keep our eyes on the work we've set out do

~Ed Hessler

From Mark Lex, former MnSTA board member:

"The remembrances I have of Ed are my interactions with him as Database Manager. I don't know if any of this is Newsletter worthy, but here's what I think of. Despite the many ways Ed pushed all of us to improve science education, he was very humble about his contributions. When we would go around the room introducing ourselves at board meetings, he didn't introduce himself as the Executive Secretary, Ed would always simply say, "Ed Hessler – I open the mail". In the "old days", many MnSTA members would renew their memberships by sending paper renewal forms by postal mail to Ed. He would send the checks to Joe Reymann and the renewal forms to me. Always the environmentalist, Ed would trim excess paper off the forms and recycle it before sending the trimmed forms off to me. Ed was always cognizant of the health of MnSTA. He often asked me for current membership numbers and fretted about the trend of decreasing members. But he also had hope for the future. Ed asked me to notify him anytime someone joined or renewed MnSTA as a Life Member. He would then send them a personalized note thanking them and noting that their Life membership showed their commitment to MnSTA and high quality science education"

From Lee Schmitt, MnSTA President 2014-2016:

"Ed Hessler was a quiet yet highly influential figure in MnSTA. He was our eyes and ears to science education – an academic in our midst – researching and writing newsletter articles on the latest trends in science and science education. An avid environmentalist, Ed's work at Hamline University's Center for Global Environmental Education championed environmental initiatives. As a science teacher, I was impressed with Ed's academic prowess when he and I taught three rigorous and rewarding online courses for science teachers. Ed was a learned, humble and thoughtful poet who provided helpful and inspired guidance to science leaders. His devotion and vision will be missed and his absence mourned."

Ed Hessler.....continued on next page

In Remembrance of Ed Hessler

Ed Hessler.....continued from previous page

From Holly Knudson, Past MnSTA president:

"I had the pleasure of working with Ed on the MnSTA Board for three 4 year terms over a span of 20 years. What comes to mind when I think about Ed is his incredible passion for science education. He was dedicated to the work of MnSTA and every mission statement that was written throughout its beginnings to the time of his death. He was this force of consistency and knowledge that board members looked to when making policies, protocols and decisions to better the organization. He was the devil's advocate to challenge some decisions, especially when critical ones were being made. He also had this sense of humor that would show itself at the most convenient times. He really was one-of-a-kind, and his presence in MnSTA and science education will forever be missed.

A reprint of Ed's Summer 2013 Department of Education, an article he posted in every MnSTA newsletter during his tenure as Executive Secretary.

"When I play with my cat, who knows if I am not a pastime for her more than she is to me?"—Michel de Montaigne

The publication of philosopher Thomas Nagel's *Mind and Cosmos* on the nature of consciousness—his belief is that it is not reducible to physical processes—reminded me of his classic essay, "What Is It Like to Be a Bat?"

Wouldn't you just love to know?! I think about this (and Montaigne) whenever I go eyeball to eyeball with jumping spiders (my pair, they with their four pair bring new meaning to the childhood taunt, "four eyes"). Stephen Jay Gould once made a request of the kind that all of us make of the cosmos from time-to-time. A grand wish. "Give me just sixty seconds—just one minute—inside the skin of (another creature). Hook me for just sixty seconds to the perceptual and conceptual apparatus of this other being—and then I will know what natural historians have sought through the ages."

Darwin was fascinated with the different worlds of animal minds. In his "M" Notebook he wrote "Origin of man now proved—metaphysics must flourish—He who understands baboon would do more towards metaphysics than Locke." With this, recalling always that nothing in biology makes sense except in the light of evolution, he set science on a course of inquiry—slowly at the outset for it wasn't until the mid-1970s that Donald R. Griffin founded cognitive ethology (how animals think). Darwin, with his relentless focus on evidence and the scientifically

tractable, noted that mind could be studied just like any other biological trait.

Since Griffin's work, laboratory and field study of consciousness in us and other organisms has provided evidence that, if anything, we've vastly underestimated animal minds and how continuous animal consciousness is across species. Some of this work is one neuron at a time, some of it is in the commonalities found in structure and function among species as evolution tinkers with available parts (and selects) over time. Some of it is through painstaking field observations and remarkably clever experiments with non-human animals.

This research has led to "The Cambridge Declaration on Consciousness in Non-Human Animals," which was publicly proclaimed on July 7, 2012 (< <http://femconference.org/> >) at the Francis Crick Memorial Conference. I just have to quote Darwin. "But can we be sure that an old dog with an excellent memory and some power of imagination as shown by his dreams, never reflects on his past pleasures in the chase?"

Nagel's definition of animal consciousness hews very closely to the organism: "if and only if there is something that it is like to be that organism—something it is like for the organism" (Wikipedia). The consciousness of others is unique. When we add the bone-jarring, opaque remark of philosopher Ludwig Wittgenstein, "If a lion could speak, we could not understand him," we are reminded that we may never know what it is to experience the conscious life of another species. Both proclaim the complexity of consciousness and the failure of language. But still they think; they feel.

Animal consciousness remains a mystery but the materialist paradigm continues to lead to reliable knowledge. Scientists working on consciousness, doing the hard work required by science—using the methods of reason, experiment, replication, careful consideration and argument about evidence, observation and so on—provide evidence almost daily that animal consciousness is a widely shared trait.



DOE Science Specialist, John Olson, presents a tribute of thanks to Ed Hessler for his tenure as Executive Secretary, a position he held for many years. Sept. 2019

Jeffers Foundation



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Questions? Email David Grack, EdD at: david.grack@jeffersfoundation.org
Register by Friday, January 22. Deposit: \$25. Deposit is refundable upon completion of the workshop. Deposits are not refundable for cancellations after January 15.



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*Incorporating Multidisciplinary Lessons
on YOUR School Grounds in WINTER*

Join the Jeffers Foundation to participate in outdoor lessons that apply to multiple subject areas with a science focus, and learn techniques for **effective outdoor instruction in winter**. This teacher institute will focus on outdoor instruction and the application of Jeffers Foundation **teaching resources that have been designed by Minnesota teachers**. Participating educators will develop observation skills through sensory activities aimed to lead to writing lessons and research projects, and **design and conduct investigations that uncover patterns and phenomena** that shape our Minnesota winter landscape. Institute activities are **multidisciplinary, standards-based** and combine journaling with winter topics such as snow science, animal tracking, animal and plant adaptations, sledding physics, and more.

Who: Teacher Institute for K-12 educators
What: Professional development by David Grack, Ed.D. Sponsored by Jeffers Foundation
When: Saturday-Sunday, January 9 & 10, 2027 8:30am - 4:30pm both dates - Lunch included
Where: Jeffers Lodge, Prior Lake, MN
CEU's & Credit: **NEW - 2 Options**
 • 2 Semester Credits: Reduced rate of \$200/credit thru Hamline University Continuing Studies
 • 18 CEU's: CEU certificate granted by the Jeffers Foundation
Registration: Online at <https://elearn.hamline.edu/> through Monday, January 4th.
 Select the option you prefer (credits or CEUs) and complete registration.

Questions, contact David Grack at:
david.grack@jeffersfoundation.org
 Jeffers Lodge
 3884 Fountain Hills Drive NW
 Prior Lake, MN

South on Hwy. 169 (cross MN River) exit on County 21
 Follow County 21 - 3.8 miles to Fountain Hills Drive.
 Take an immediate right at Ulf Explorers Childcare.





Environmental Stewardship Through Education JeffersFoundation.org

PHENOLOGY WORKSHOP

Discover how you can **elevate** your students' observation skills and development as scientists, writers, and artists through interdisciplinary experiences that focus on seasonal patterns in nature.



This workshop focuses on biological and physical events in nature and their relationship with weather and climate. This is the science of Phenology. Throughout the school year we anticipate many lasts and firsts; including sightings of animals migrating or preparing to sleep through the winter, ice in and ice out on lakes, spring return migration, noticing leaf out and flower bloom of many trees and spring flowers, and more.

Join the Jeffers foundation to learn more about Phenology in Minnesota through observation, investigation, and journaling exercises. Actively participate in lessons and receive resources that have been developed by Minnesota educators that provide place-based experiences that will elevate your instruction of science, ELA, math, social studies, and art while meeting K-7 standards across those subject areas.

John Latimer, one of Minnesota's leading Phenologists, will join us to share his expertise, including what phenological events you may observe with your students throughout the year on your school grounds and how your observations can be shared with interested Phenologists across the state of Minnesota.



What: FREE workshop
Who: K-7 Educators **Class Size:** Limited to 30 participants
When: Saturday, October 24, 2026 8:00am - 4:00pm - Lunch will be provided
Where: St. Joseph's Catholic School - 315 SW 21st Street, Grand Rapids, MN
Credit: Earn 8 CEUs
Register online: jeffersfoundation.org A registration fee of \$25 will hold your spot. This fee will be refunded upon completion of the workshop.

Questions, contact David Grack at:
david.grack@jeffersfoundation.org

St. Joseph's Catholic School
 315 SW 21st Street,
 Grand Rapids, MN





Environmental Stewardship Through Education JeffersFoundation.org

Now! Earn College Credit for Jeffers Institutes

Jeffers Foundation Education Certificate

Earn a *Team Teaching with Minnesota's Natural Environment* certificate by completing 5 institutes (10 semester credits) offered as co-sponsored courses with the Jeffers Foundation and Hamline University Continuing Studies.

Jeffers Foundation Institutes provide educators with experiences that raise their content knowledge while modeling practices that promote science and literacy instruction. Institutes will focus on outdoor investigations and journaling experiences. Educators will discover how outdoor instruction heightens engagement and achievement in science and all subject areas. Science-focused institutes will embed multidisciplinary experiences that promote connections of science concepts and practices to all subject areas, leading to real-world teaching and learning.

Minnesota's natural environment is a partner (team teacher) that can help educators reach ALL students. Educators will learn techniques, activities, and resources in each institute that can be readily implemented on their school grounds. There, they will notice the positive impact outdoor learning will have on their science instruction, the writing and communication skills of their students, and the positive attitude and stewardship students will develop for their school grounds and surrounding natural environment.

1

Certificate Program: Option for College Credits

10 semester credits from the co-sponsored institutes lead to a Jeffers Foundation "Team Teaching with Minnesota's Natural Environment" certificate awarded by Hamline University Continuing Studies.

Each co-sponsored Institute = 2 semester credits (equals 48 contact/instructional hours)
Reduced rate for co-sponsored Institutes = \$200/credit (\$400/institute)

2

Jeffers Foundation Institutes: Option for FREE CEUs

Educators can register for any Jeffers Foundation Institute for FREE and earn CEUs awarded by the Jeffers Foundation as has been customary for Jeffers Institutes and Workshops for 15+ years. Institutes are offered (simultaneously) for Teacher Continuing Education Units (CEUs) and Credits. Registration for co-sponsored Institutes will be completed through Hamline University Continuing Studies <https://elearn.hamline.edu/>

With this new model, educators can continue to register and participate for free in Jeffers Content Institutes (now with expanded topic options) or they can register for the credit option and apply the institutes toward a Jeffers Foundation *Team Teaching with Minnesota's Natural Environment* certificate awarded by Hamline University Continuing Studies.

The Jeffers Foundation continues to provide professional development that promotes environmental stewardship and outdoor learning opportunities for educators and their students on their school grounds, and beyond. We look forward to working with and supporting educators in this mission as they join us for one or more institutes, or possibly to complete the 10 credit certificate.



Questions: Contact David Grack, EdD at david.grack@jeffersfoundation.org

JeffersFoundation.org





Jeffers Foundation Education Certificate



Team Teaching with Minnesota's Natural Environment

Upcoming Institutes

SPRING

Birding Institute - April 11 & 18, 2026
(Offered annually)

SUMMER

Patterns in Nature Institute - June 16-18, 2026 (Offered every-other-year)
The Outdoor Classroom* - July 13-15, 2026 (Offered annually)
Earth Science Outdoors - July 27-29, 2026 (Offered every-other-year)

FALL

Nature Journaling Institute - September 19-20, 2026 (Offered every-other-year)

WINTER

The Outdoor Classroom: Winter*
January 2027
(Dates TBD, offered annually)

SUMMER / FALL 2027

Insect Institute - Summer 2027 (Offered every-other-year)
Ecology Institute - Summer or Fall 2027 (Offered every-other-year)
ELA Outdoors - Summer or Fall 2027 (Offered every-other-year)

*Educators must complete at least one of these two institutes in order to earn a certificate.



Questions: Contact David Grack, EdD at david.grack@jeffersfoundation.org

JeffersFoundation.org



Fall 2026

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Have career insights to share?





Be a mentor in the CFANS Mentor Program!

What if you knew then what you know now?

No one does it alone. Be a positive part of a CFANS student's professional journey. Share your insights about careers in food, agriculture, and natural resources. Your career insights will open a world of possibilities. Be one of nearly 200 alumni or professional matches with a CFANS student.

"Knowing you're able to make a difference for a student — you're able to share your experience, your knowledge, your network — makes a difference. Knowing you're setting someone up for success, that's the best part of it."

-Former Mentor

As a mentor you will:

- Share valuable career knowledge with your mentee
- Connect with your mentee during monthly meetings virtually/in-person
- Provide feedback on your mentee's career outlook and resume
- If possible, host your mentee at your workplace for a half-day job shadow

★
★
★

APPLY BY
October 2,
2026

★
★
★



Learn more & apply at
z.umn.edu/mentor
or email CFANSaro@umn.edu



ARE YOU TIRED OF...

- endless online searching for classroom resources?
- never-ending PDF "lesson plans"?
- materials that look good but hard to use?
- instructional materials that do not align with student needs?

JOIN THE WONDRUS EDUCATORS COUNCIL.

www.surveymonkey.com/r/WondrusEducators



Get paid to give feedback to science museums and research institutions on their classroom resources!



It is our mission to:
stimulate, coordinate, and
improve science teaching
and learning for all.

Why Join MnSTA?

- Keep up with the latest developments in science education
- Network with peers from around the state
- Help us advocate for science education at the district and state level



Join at mnsta.org





Follow Us on Social Media



Follow us for PD, ESTEP updates, NSTA news, and more!

 on BlueSky @mnsta.bsky.social

 on Instagram @mnscienceteachers

 on Twitter @mnsta1

 **Public page:** Minnesota Science Teachers Association - MnSTA
Members-only: Minnesota Science Teachers Association members

Keep Your MnSTA Profile Up-To-Date

MnSTA does its best to keep you abreast of everything happening in science education in Minnesota. We do this via several outlets including:

- ❑ MnSTA Website www.mnsta.org
- ❑ Instagram @mnscienceteachers
- ❑ MnSTA Facebook and Twitter pages (@MnSTA1)
- ❑ Weekly Digest of postings (sent via email)
- ❑ Updates from MDE Science Specialist Angela Kolonich (newsletter)
- ❑ Quarterly Newsletter (availability announced via email)
- ❑ Occasional email messages to all members

The best way to make sure you are receiving email notices and all of the above information, please make sure that MnSTA has your correct email address, mailing address, and your permission to send this information to you. Your profile also contains information about your school, disciplines you teach, and the grade levels you work with. These can all be updated at any time.

You can update your MnSTA profile by going to the MnSTA website (www.mnsta.org) and logging in. Click on the My Profile link. You will then see links to Update Profile, Update Addresses, Update Photo, and Change Password. If you have any questions about this, please feel free to contact MnSTA.

MnSTA, Inc. is an IRS 501 (c) (3) Charitable Educational Corporation, incorporated as a tax exempt, non-profit organization with the Minnesota Secretary of State. Donations and dues are tax deductible charitable contributions for itemized deductions on IRS form 1040 Schedule A. The newsletter is an exempt program service provided to the membership. A membership form is found on the last page

Contacts and Resources

Free resources for teaching how science works

[Decoding Science](#) is a free interactive resource from the National Academies of Sciences, Engineering and medicine. It’s all vetted by experts and ready to use in your classroom.

A 90-second video on how science works
Clear answers to challenging questions
Stories from real-life scientists
And more...

PLT “Explore Your Environment” K-8 Activity Guide Released

Project Learning Tree (PLT) released a new curriculum guide to engage kindergarten through grade 8 students in exploring their environment. Fifty field-tested, hands-on activities integrate investigations of nature with science, math, English language arts, and social studies.

Educators can obtain a copy of PLT’s Explore Your Environment: K-8 [Activity Guide](#) directly from [PLT’s Shop](#), from Amazon and other places where books are sold, or by attending a local PLT professional development workshop conducted by PLT’s 50-state network of 75 coordinators and 1,000 facilitators across the country. [Minnesota PLT site](#)

. Student Programs, Awards and Competitions

Science and Engineering Competitions

- [Science Bowl](#) – middle and high school
- [Minnesota Science Olympiad](#) – middle and high school
- [Science and Engineering Fair](#) – middle and high school
- [FIRST Lego League](#), [FIRST Tech Challenge](#), [FIRST Robotics](#)- All grades
- [Supermileage Challenge](#) - High school
- [Real World Design Challenge](#) - High school
- [Toshiba/NSTA ExploraVision](#) - Classroom based for all grades
- [NSTA Angela Award](#) – girls grades 5 – 8
- [MN Scholars of Distinction](#) – high school
- [National Youth Science Camp](#) – two high school seniors are selected as MN delegates

Minnesota Programs and Competitions

Many competitions, out-of-school programs and field trip opportunities are listed in the [Reach for the Stars Catalog of Programs and Activities](#).

MDE Science Contacts:

Angela Kolonich, Science Content Specialist
angela.kolonich@state.mn.us

Jim Wood, Science Assessment Specialist
jim.wood@state.mn.us
Judi Iverson, Science Assessment Specialist
judi.iverson@state.mn.us
Sarah Carter, STEM and Computer Science Specialist
sarah.carter@state.mn.us
Send submissions for the Science Update to Angela Kolonich angela.kolonich@state.mn.us

Other Minnesota Links:

Minn. Dept. of Education [Science Page](#)
Minn. Science Teachers Association mnsta.org
[Frameworks](#) for MN Science and Mathematics Standards
Get – [STEM](#) Connections between schools and businesses
Mn-STEM STEM programs and [resources](#) for families, schools and communitySharing Environmental Education Knowledge environmental education [resources](#)
[Minnesota Academy of Science](#): Science Fair, Science Bowl and other competitions Mn DNR Education website: [Curriculum, professional development, posters, etc.](#)

[Youth Eco Solutions](#) (YES!) – Statewide, youth-led program for hands-on eco related projects

MnSTA Board Directory

Below, you will find information about your MnSTA Board Members. The listing includes the board member’s school (or organization), mailing address, work phone, FAX number, and e-mail address. The board wishes to make itself as accessible as possible for our members. Please feel free to contact your discipline representative, regional representative, or executive board members if you have ideas, concerns, or wish to help with the mission or operation of MnSTA. We are always looking for members who wish to serve MnSTA as Board Members, Non-Board Service Chairs or Members, and as Committee Chairs or Members.

Executive Board:

Exec. Secretary/Database	Tom Meagher	Owatonna Public Schools	
	507-210-4143	tmeagher@isd761.org	
Past-President	Haley Kalina	Alexandria Public Schools	510 McKay Ave N. Alexandria, MN 56308
	320-762-7900	president@mnsta.org	
President	Missie Olson	Becker High School	12000 Hancock St. Becker, MN 55308
	320-274-3341	molson@isd726.org	
Treasurer	John Olson	Metropolitan State Univ.	700 E. 7th St. St. Paul, MN 55107
		treasurer@mnsta.org	
DOE Science Specialist	Angela Kolonich		angela.kolonich@state.mn.us

Discipline Directors:

Biology	Jim Lane	Mahtomedi High School	8000 75th St. N. Mahtomedi,MN
		jim.lane@mnsta.org	
Earth Science	Dana Smith	Bemidji Middle School	1910 Middle School Ave. NW Bemidji, MN 56601
	218-333-3215	dana_smith@isd31.net	
Chemistry	Jillian Harvalls	St. Thomas Academy	949 Mendota Heights Rd. Mendota Heights . MN 55120
	651-683-1345	jharvalis@cadets.com	
Elementary/Greater MN	Open		
Elementary/Metro	Kim Benton	Garlough Environmental Magnet	1740 Chariton St. West St. Paul 55118
	651-403-8172	kimberly.benton@isd197.org	
Higher Ed	Jeff Pribyl	Minnesota State University, Mankato	143 Ford Hall Mankato, MN 56001
	507-389-6024		
Informal Ed	Felicia Leammukda	St. Cloud State University	
		felicia.leammukda@stcloudstate.edu	
Alternative Ed.	Jess Paulson	Sciences Academy	8008 83rd St. NW Maple Lake, Mn 55358
	952-852-0129	jpaulson@jgesa.org	
Physics	Jason Hall	Mound Westonka High School	5905 Sunnyfield Rd. E. Minnetrista 55364
	jhall@ahastars.org		
Indigenous Science	Hillary Barron	Bemidji State University	1500 Birchmont Dr. Bemidji, 56601
	218-428-2689	hilliary.barron@bemidjistate.edu	
Private Schools	Mark Peterson	Benilde-St. Margaret’s School	2501 Hwy 100 S. St. Louis Park MN 55416
	320-420-5246	mpeterson@bsmschool.org	

Region Representatives:

Region 1&2: North	Elizabeth Cakebread	Ada-Borup-West School	604 W. Thorup Ave. Ada, MN 56510
	218-784-5300	elizabethc@ada.k12.mn.us	
Region 3: Northeast	Open		
Region 4: Westcentral	Open		
Region 5: Northcentral	Deb Schlueter	Brainerd High School	Brainerd. MN
	deb.schlueter@mnsta.org		

MnSTA Board Directory

Region 6&8 Southcent	Kristin Schultz	Edgerton Public School	Edgerton, Mn
		kristin.schultz@mnsta.org	
Region 7: Eastcentral	Stephanie Moses	Princeton High School	807 8th Ave. S. Princeton, MN 55371
	763-607-0472	Stephanie.moses@isd477.org	
Region 9: South	Anneliese Johnson	Cleveland Public School	
	anneliese.johnson@mnsta.org		
Region 10: Southeast	Kyle Casper	Rochester Public Schools	615 7th St. SW Rochester MN 55902
Region 11: Metro	Marta Stoeckel	ISD 622	2520 12th Ave. E. N. St. Paul, MN 55109
	region11rep@mnsta.org		

Ancillary Positions:

Database	Tom Meagher	Owatonna Public Schools	
	507-210-4143	tmeagher@isd761.org	
Web Content Curator	Kristin Caquelin	Minneapolis Public Schools	250 W. Broadway Ave. Minneapolis 55411
		kristin.caquelin@mpls.k12.mn.us	
Webmaster	Eric Koser	Mankato Area Public Schools	10 Civic Center Plaza Mankato, MN 56001
		e: ekphys@gmail.com	
Mankato Area Public Schools	10 Civic Center Plaza	Mankato, MN 56001	
	W: 507-387-3461 x 322	F: 507-345-1502	webmaster@mnsta.org
Newsletter	Jerry Wenzel	jerrywenzel@brainerd.net	
Social Media Coord.	Dan Voss	dcvoss1@gmail.com	
NSTA Dist. IX Director	Ashley Armstrong	South Dakota, North Dakkota, Minnesota	
		ashleynarmstrong7@gmail.com	
Conference Coordinator	Gwen Isaacson	gwen.isaacson@mnsta.org	

Science Teaching and Learning

Equity, Inclusion and Accessibility in Science Education

MnSTA Strategic Plan 2018-2026

Science Leadership

Enhance MnSTA as a Professional Organization

Goal 1: Strengthen science teaching and learning in Minnesota

Goal 2: Strengthen Leadership in Science Education in Minnesota

Goal 3: Promote equity, inclusion and accessibility in science education

Goal 4: Enhance MnSTA as a Professional Science Education Organization

Membership Application Form

MnSTA Membership Application Form

Join the Minnesota Science Teachers Association (MnSTA), the professional organization whose primary goal is the advancement of science education. Mail this form along with your check to:
MnSTA Treasurer, 24405 Iceland Path, Lakeville, MN 55044

Home

Name (First, MI, Last)

Address

City

State

Zip code

Phone number

Preferred email address

Second email address

School/Organization

Name

Address

City

State

Zip code

Phone number

School district #
(enter "P" if Private, "A" if Alternative, "C" if Charter)

Rates

☐ Basic Membership\$25

☐ First Year Teacher\$15

☐ Retired Teacher\$15

☐ Pre-service Student.....\$10

☐ Elementary School Building\$75
Includes all teachers in the building

☐ Life Membership: to age 35\$400
age 36-50\$300
over 50\$200

☐ New Member

☐ Renewing/Past Member

A joint MnSTA - NSTA membership is available through NSTA (<https://www.nsta.org>)

Discipline and Grade Level

☐ Biology☐ Chemistry☐ Earth Science☐ Environmental Sci☐ Life Science☐ Physical Science☐ Physics

☐ Elementary (PreK-2)☐ Elementary (3-6)☐ Middle/Jr. High School (6-9)☐ High School (9-12)☐ College/University☐ Informal Ed

MnSTA Photo Release Statement

By becoming a member of the Minnesota Science Teachers Association (MnSTA) or by attending any MnSTA-sponsored event, you are granting permission for the use of your image for MnSTA promotional purposes without compensation. If you have questions regarding this policy, please contact membership@mnsta.org

Privacy Information

Who can view your School/Organization Profile? ☐ Members ☐ Administration only

MnSTA keeps you informed about the events and issues impacting science education in Minnesota through its website and an email Digest of those website postings, and periodic informational emails.

Do you consent to receive email communications from us? ☐ Yes ☐ No

Teacher Leadership

☐ Please contact me regarding additional involvement and/or potential leadership opportunities with MnSTA

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MnSTA Newsletter

Fall 2026

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