# Teacher Awards

Friday, April 1, 2022

#### President's Address

Welcome to the 2022 NSTA Teacher Awards Program — A Celebration of Excellence in Science Education.

After the past two years of challenges to teaching and learning, we finally have the opportunity to celebrate the true lights of science education, exemplars for us all. This occasion also provides hope—the hope that focus and dedication to

our shared mission of educating and sustaining our students can prevail despite these challenges.

Each year, NSTA has the distinct honor and privilege of recognizing the best among us for their vision, dedication, and focus on student learning. They represent the entire range of our membership, from those educators new to the field to those whose contributions are long-standing and perhaps beyond measure.

This event also provides an opportunity to gather, to share in the celebration of our colleagues, friends, and family for their accomplishments. As a group we learn that there are few limits to exemplary work and to what it is possible to accomplish, which makes all of us better teachers in the long run.

We offer congratulations to each of the awardees and thank all of you for participating in this year's awards program. Given the ongoing challenges of the last two years, their dedication to serving students is particularly evident, even while faced with changing modes of instruction, uncertain support resulting from various shortages, and a deep need to support the social and emotional needs of their students.

As you interact with our award winners, you will notice the extraordinary passion they bring to their work and the inspiration in their stories. It is my hope that you will feel a renewed sense of pride in our profession, and that you will rekindle your own passion for science and science teaching as we move toward a better and brighter future for science teaching and learning.

Much appreciation to the NSTA Awards and Recognition committee for their hard work-work which is often unheralded. Yet, their dedication of time is deep and reflective.

Finally, NSTA does not stand alone in these recognitions. We are pleased to have such great support for these awards from our sponsor partners. Your generosity provides the platform for these teachers to share their success both in, and outside of the classroom.

Once again, CONGRATULATIONS to the 2022 NSTA Teacher Award Recipients!

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NSTA President 2021-22





# 2021–2022 TEACHER AWARDS & RECOGNITIONS COMMITTEE

Paul Nordhaus, Chairperson Todd Ensign Sandra George Carolyn Hayes Cat Morales III Joey Noelle Scott Taylor Planz Lori Townsend William Veal Steve Wood Brenda Walsh, Board Liaison Michelle Butler, Director, Awardss

# 2021–2022 SHELL SCIENCE TEACHING AWARD JUDGING PANEL

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# NSTA AWARD SPONSORS

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## **Gerry Wheeler**

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## ANGELA AWARD

This award honors one female student in grades 5-8, who is involved in or has a strong connection to science. The award has been established in honor of Gerry Wheeler and his outstanding dedication to NSTA and lifelong commitment to science education.

The awardee receives a \$1,000 US EE Savings Bond or Canada Savings Bond purchased for the equivalent issue price. The President will present her award at the awardees' school each spring.



#### Lydia Denton

Science Student Sallie B Howard School of the Arts and Science Wilson, NC

Lydia Denton is determined to make the world better through science and inventing. In elementary school she loved taking apart electronics to discover how

they worked. She used those parts to invent new things, solving some very important problems in her life—like a facial recognition cabinet to keep her siblings from eating her candy! Denton works hard to become a leader in her school and community. Her middle school had never participated in any inventing contests, so in the sixth grade she created a team that invented BREATHE, a device for measuring hypoxia. Last year, even when COVID forced everyone to be remote, her team added members and invented a picohydroelectric generator that can be used in downspouts and sewer drains to power sump-pumps to help with flooding. Denton also loves public speaking and acting, which help her become a better communicator. Being able to speak and communicate her ideas clearly, concisely, and with enthusiasm will help her encourage more people to love science. "Lydia represented the Optimist International organization, the entire state of North Carolina, her school and her family and friends through her impact and influence as an amazing communicator... all with a keen sense of honor, acknowledgement, and gratitude for those who helped her along the way," says Steve Spangler, Amazing Science Experiences.

# CORTEVA EXCELLENCE IN AGRICULTURAL SCIENCE EDUCATION AWARD

Sponsored by Corteva Agriscience

*This award recognizes excellence and innovation in the field of agricultural science education.* 

The award consists of a \$1000 to participate in any of the NSTA 2020-21 virtual conference offerings



#### Lynn Prosen

Lower School Science and STREAMS Teacher Gill St. Bernard's School Basking Ridge, NJ

Lynn Prosen believes that students need to have experiences that connect them to the land and to our food sources to figure out and make sense of the complexities of our natural ecosystems, food systems, and

the impact on the natural world. Gill St. Bernard's School is an ecological and agricultural campus with place-based learning experiences with agricultural lessons that are integrated into science lessons. The farm offers many scientific phenomena for students to discover and explore. Prosen conducts an activity that engages students in a yearlong agricultural experience with the instructional goals of making sense of inherited traits, life cycles, and animal groups. Students obtain, evaluate, and communicate information, analyze and interpret data, and engage in argument from evidence that they have collected through observation. Prosen would value an opportunity to discuss ideas with a Corteva Pioneer Scientist so she can design and plant a section of a new teaching garden space for plant heredity as well as human and animal food plants. Visiting with a scientist would also help bridge the gap between most industries and current science education in schools. "Lynn has a thirst for learning and teaching. Her manner engages students of all ages, and she is constantly exploring new ways to teach. The level of excitement and enthusiasm she creates in her classes is contagious. Whether in the classroom or on the farm, Lynn instills a love of learning," says Cindy S. Wyatt Director of Summer and Auxiliary Programs at Gill St. Bernard's School.

# eCYBERMISSION TEAM ADVISOR NATIONAL RECOGNITION

Sponsored by the U.S. Army Educational Outreach Program

eCYBERMISSION is a web-based STEM competition for students in grades six through nine that promotes self-discovery and enables all students to recognize the real-life applications of STEM. Teams of three or four students, led by Team Advisors, are instructed to ask questions (for science) or define problems (for engineering), and then construct explanations (for science) or design solutions (for engineering) based on identified problems in their community. Students compete for State, Regional, and National Awards. This is one of the U.S. Army Educational Outreach Programs. This Recognition includes all expenses paid to participate in any of the NSTA 2020-21 virtual conference offerings.



Laura Stary Team: Cedar Busters 6th Grade Southcrest Christina School Lubbock, Texas



**Sharmila Murthy** Team: The CQuestrators 7th Grade Rachel Carson Middle School, Herndon, Virginia

# eCYBERMISSION TEAM ADVISOR NATIONAL RECOGNITION

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Ananth Sankaranarayanan Team: Stumptown 8th Grade Community Group: RoboRink, Portland, Oregon



**Subbarao Meduri** Team: Pantry Patrol 9th Grade Enloe Magnet High School Raleigh, North Carolina

This award provides selected K-12 teachers in their first five years of teaching with funds to attend the NSTA National Conference on Science Education. Award recipients will be mentored, tracked, and provided with continuing opportunities for meaningful involvement with NSTA and its activities.

For this scholarship a teacher must have taught less than five years full-time at the time of application and be an NSTA member in good standing. To the extent possible, recipients must have been a student member of NSTA as a pre-service teacher. This award consists of up to \$1,000 to participate in any of the NSTA 2020-21 virtual conference offerings. Recipients will be invited to attend a variety of workshops and presentations that are of particular interest to new teachers at the NSTA National Conference.



#### Alexander Eden

Science Teacher Greater Lowell Technical High School Methuen, MA

From the start of his career, Alexander Eden knew he wanted to prioritize a welcoming environment for his students above all else. As a first-generation college

graduate and a child of immigrant parents, he knows the unique challenges that many students face and wants to be a source of motivation to show them they can achieve anything they set their minds to. Eden is always seeking new strategies to advance his pedagogy so he can reach every student. When professional development opportunities arise, he is drawn to experiences that have either a socio-emotional learning component or a focus on working with students of diverse backgrounds. In summer 2021, Eden presented at and participated in a virtual conference centered on equity and racial justice. This conference highlighted many experiences students may face that are out of their control but that the teacher may not easily be aware of. Attending the NSTA national conference will have an impact on his students for many years to come. He is always willing to grow and expand his pedagogy and perspective on education and believes that one aspect of being a good teacher is being a lifelong learner. "Alex is creative. He has had diverse experiences in the field of biology which allow him to develop unique, locally-based lessons. Alex is an outstanding young teacher who already made a positive impact on his students, school community, and teaching colleagues at the national level," says Tara Alcorn, Science Instructor, Greater Lowell Technical High School.



#### **Carey Hancey-Shier**

IMS Teacher Grace E Metz Middle School Lorton, VA

Carey Hancey Shier teaches multiple STEM subjects so she believes it is essential that she continues to learn effective methods to actively engage students as well as provide learning opportunities. Holistically, she approaches teaching as an evolving profession

that requires constant pedagogical refinement. Attending conferences are advantageous in providing current updates on new instructional tools and platforms. Additionally, there are many occasions to interact with colleagues and establish fruitful connections. These professional relationships offer chances to be reflective and allow continuance to grow as a teacher long after the conference has ended. She has attended the virtual sessions of NSTA Engage, which proved to be very beneficial and each supplied numerous strategies to add to my toolbox, such as problem-based learning and argument-driven inquiry, which helped hone her instructional delivery. Application of various learned tactics, from teaching brainstorming techniques to incorporating formative peer review, has yielded positive results in student engagement. Anthony Vargas, Supervisor of Gifted/Talented and Advanced Programs

Manassas City Public Schools, says Shier has a "passion for learning and a unique ability to challenge students through authentic scientific exploration."

#### Jenniffer Stetler



STEAM Teacher Chamblee Middle School Tucker, GA

Jenniffer Stetler believes that a growth mindset as a teacher is essential for a new teacher and the only way to be successful in this career. She has been a STEAM teacher working for Chamblee Middle School for

three years with her role morphing into being co-coordinator and teacher for the middle school as the school obtained STEM certification from Cognia (AdvancedEd). Her role has shown her that it is important to look for opportunities to expand her pedagogy, knowledge, applications, and technology to be an impactful STEAM teacher and coordinator. A way to expand her growth mindset and skills as a teacher is to attend her second NSTA national conference. Stetler is focusing on building her STEAM pedagogy and skills on expanding a few key areas that include literacy, community partnerships, equitable teaching, importance of STEAM over STEM, and technology. Her educational motto is to teach children while doing fun activities and projects in class.

She also wants to focus on community partnerships and equitable teaching to learn how to incorporate the community in a unique manner. She loves to learn and better herself so she can inspire her students. She gets inspiration from learning from the best so she can be a better teacher. Attendance at the NSTA national conference will be crucial to help her grow as a new STEAM teacher and coordinator. Stetler "displays the characteristics of a teacher with drive, motivation, perseverance, collaborative, supportive, and empathic to her learners," says Andrea D. Wright, STEM Coordinator, DeKalb County School District.

#### Julia Navarro



Biology Teacher Wheeling High School Park Ridge, IL

In her last three years as an educator, two things have stood out to Julia Navarro as being important areas for growth and development within the field of science

education: acknowledging and implementing the confluence of equity and education, and approaching science instruction and assessment through the three dimensions of *Next Generation Science Standards*. She would like to explore these areas at the NSTA national conference. She's interested in creating labs that are more student-driven inquiry experiences. She hopes to better understand the key issues of equity and diversity in STEM education and how they play a role in the development of standards and curriculum that impact students of color. She also hopes to acquire the tools to reflect upon and discuss any preconceived notions, values, and common practices that might impact equity in STEM education. As a teacher of color who teaches students of color, it is important for her to understand the factors that prevent students from being able to achieve. It is also important to advocate for equitable curriculum and standards for these students and teach them what to look for when they need to advocate for themselves.

"Julia has a natural ability to lead and displays a teaching presence of someone well beyond her years. She has those intuitive qualities that make a teacher great," says Shannon Chambers, Wheeling High School Science Department.

# NORTHROP GRUMMAN FOUNDATION EXCELLENCE IN ENGINEERING EDUCATION AWARD

sponsored by Northrop Grumman Foundation

This award is to recognize excellence in the field of engineering education as outlined in the NSTA Position Statement on the Next Generation Science Standards (NGSS), Section II Conceptual Shifts in the NGSS. The awardee receives \$2000 to participate in any of the NSTA 2020-21 virtual conference offerings.



#### Bruce Wellman

Chemistry & Engineering Teacher Olathe Engineering Academy @ Olathe Northwest High School Olathe, KS

Bruce Wellman is currently in the final year as co-PI of an NSF funded DR K–12 research and development project focused on improving high school science students'

engineering-problem-framing skills. He leads the teacher/student portion of the project, which has 12 teachers and over 900 students in 4 different high schools. Throughout his time teaching engineering design, he has routinely seen students too quickly move into the ideation phase of the design process before they have a solid understanding of the needs of various stakeholders and constraints that must be satisfied to have a valid solution. He believes efforts to build these problem-framing skills in students will have a significant impact on the quality of their designs in future endeavors. Wellman has also recently been a National STEM Teacher Ambassador for NSTA and NCTM and a member of the National STEM Education Advisory Panel. "Bruce Wellman is an exceptional colleague, a brilliant writer, a talented classroom teacher loved by his students, and a true leader," says Stacy S. Klein-Gardner, Adjunct Professor of Biomedical Engineering, Vanderbilt University.

# DISTINGUISHED INFORMAL SCIENCE EDUCATION AWARD

Sponsored by AEOP

This award honors NSTA members who are not classroom teachers and who teach science in an informal setting (i.e., museum, science-technology center, or community science center) and who have made extraordinary contributions to the advancement of science education in an informal or nontraditional school setting.

#### Karen Hays



School & Teacher Partnerships Manager Denver Zoological Foundation Denver, Colorado

Karen Hays' distinctions as an outstanding informal science educator range from the national to the local level. Her enthusiasm and can-do attitude are infectious,

attracts diverse collaborators, builds lasting bridges between in-school and out-of-school STEM educators, and allows her staff to excel in their efforts. She spent 23 years developing the education programs at the Denver Zoo and Denver Museum of Nature & Science (DMNS) that transformed its program offerings and influenced programs elsewhere in the country.

Her involvement in the Mount Sanford Tribal Consortium's (MSTC) Health Awareness Partnership Initiative in Alaska and the Urban Advantage programs are examples of programs she led that deserve national emulation. Equally important is Karen's leadership to develop the Museum's new fourcomponent framework that provides a balanced and deliberate approach for designing effective experiences that align with the *NGSS*. Karen took all of these skills to her current position at the Denver Zoo, where she has built an innovative school partnership program with a bilingual, community-based microschool and continued in a leadership role with the Urban Advantage program she started at DMNS.

Karen has held many leadership positions at NSTA and the Colorado Association of Science Teachers, most notably as Committee Chair for the NSTA STEM Forum and Expo (2019–2021). She was instrumental in designing the STEM Forum over these years, and led the effort to convert the conference to a virtual meeting during the COVID pandemic. "The legacy that Karen continues to leave on the state of informal science education in Colorado is one built on hard, disciplined work. Her contributions have led to why people view the Denver Zoo and her time at DMNS as exemplary models of informal science education, not only in the state, but in the nation," says Robert Payo, Director of K–12 Education Denver Urban Gardens."



# DISTINGUISHED INFORMAL SCIENCE EDUCATION AWARD



#### **Christine Moskalik**

Curriculum & Professional Development Specialist Illinois Mathematics and Science Academy Aurora, Illinois

Christine Moskalik believes that informal science education is important to the development of student STEM beliefs, attitudes, and interests, and can help supplement the science learning that students receive

from their formal schooling experiences. Over the last decade, she has become a dedicated, passionate, and creative informal science educator.

She created an award-winning informal science program, created partnerships with park districts to provide hands-on experiences to students in before- and after-school programs, established a satellite location for a Chicago-based informal science program for young girls, and has been involved in various informal science education initiatives.

Moskalik has taken an active role in NSTA, such as volunteering at conference events, serving as a manuscript reviewer/content expert for NSTA publications, attending conferences, submitting proposals to present at NSTA conferences, and serving on the Informal Science Education Committee. Her doctoral research in educational leadership addressed parental perceptions about informal STEM education and included the creation of a novel instrument that informal STEM programs may be interested in using.

"Christine Moskalik exemplifies the educator who continues to look for innovative ways to reach students and excite them about STEM and STEM concepts," says Norman Robinson, Chief Innovation and Education Officer, Illinois Mathematics and Science Academy.

## NSTA LEGACY AWARD

This award recognizes long-standing members of NSTA (minimum 15 years) who have been deceased for no more than 10 years. An individual may be nominated within ten (10) years after their death; however, there may be variances to these criteria.



Norman G. Lederman (Judith Lederman, spouse) Distinguished Professor Illinois Institute of Technology Chicago, Illinois

Norman G. Lederman was a scholar and researcher best known for his research on teaching and learning about the nature of science (NOS). His 1992 review

of the research literature of NOS published in the Journal of Research in Science Teaching (JRST) shaped research on NOS in science education since that time. Lederman has given more than 1,000 presentations, invited talks, and keynote addresses at regional, national, and international professional conferences and meetings as well as universities around the globe. Lederman received the prestigious recognition as a Fellow of both the American Association for the Advancement of Science (2009) and the American Educational Research Association (2010). He served on too many task forces and committees to mention-his CV is 120 pages! He served on the Board of Directors and as President of both NARST and AETS, and on the NSTA Board of Directors twice. He received the NSTA Distinguished Service to Science Education Award in 2017. After teaching science education and teacher education at Syracuse and State University of New York-Albany, Lederman became professor at Oregon State University (OSU) in 1985 until founding and chairing the Illinois Institute of Technology Department of Mathematics and Science Education in 2001. Over the next 19 years he shaped the department and grew it into a local, national, and international force in discipline-based mathematics and science education; he retired in 2020 as a Distinguished Professor. Lederman was a major professor to 51 doctoral students. He modeled for them what it means to be a professional. For example, at NSTA meetings, you would see Lederman and his wife Judy with their entourage of graduate students...showing them the ropes; what to do, who to see; how to network; and helping them understand the value of attending, presenting, participating in, and learning from professional

# NSTA LEGACY AWARD

organizations. "Norm was an intellectual force and prolific researcher over his 47-year career. ... He, along with his wife and partner Judith Lederman, worked tirelessly to educate and support science teachers around the world to include NOS and nature of scientific inquiry in their teaching. ... In other words, he had a global impact on advancing scientific literacy," says Renée Schwartz, Professor, Science Education, Department of Middle and Secondary Education, Georgia State University, and President of NARST.

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# ROBERT H. CARLETON AWARD FOR NATIONAL LEADERSHIP IN THE FIELD OF SCIENCE EDUCATION

This is the most prestigious award an NSTA member may receive. The Robert H. Carleton Award recognizes one individual who has made outstanding contributions to and provided leadership in science education at the national level and to NSTA in particular. It is NSTA's highest honor.

The awardee receives \$5,000; a formal citation; and an expense-paid trip to attend the NSTA National Conference on Science Education.

# Dennis Schatz



Senior Fellow Institute for Learning Innovation Seattle, Washington

Dennis Schatz has had a long career of service to science education, especially to NSTA. His service to NSTA dates to the 1980s and includes numerous committees and task forces, including serving as the inaugural

editor of NSTA's first online journal, *Connected Science Learning*. His service to NSTA culminated with six years on the board of directors, first as the Informal Science Division Director, followed by three years in the presidential chain, serving as president in 2019-2020 during a very challenging time.

His contributions to the broader field of science education have been both effective and, in many cases, revolutionary. He helped establish new methods of curriculum development, contributed to the evolution and support of science centers, and championed the value of informal science education through service to key organizations, including NSTA, National Science Foundation (NSF), Association of Science-Technology Centers, Astronomical Society of the Pacific, and National Academies of Science. His many children's books attest to his ability to engage children's interests through well-planned and tested activities.

"Dennis is the epitome of what is expected of the Carleton Award recipient, having contributed to NSTA and the national science education community with excellence in a multitude of significant aspects for over 50 years," says Harold Pratt President, Educational Consultants Inc., and NSTA President, 2000–2001

## ROBERT E. YAGER EXEMPLARY TEACHING AWARDS

This award recognizes excellence and innovation in the field of science education. This award acknowledges teachers who share Robert Yager's passion for education and continued professional development. This award also honors Robert Yager's effort to make excellent science education accessible to students of the 21st century and beyond. Awardees will have exhibited excellence and innovation in the field of science education, and embody the mission statement of NSTA. Six awardees will be selected annually.

The individual awardees will receive \$1,000 to participate in any of the NSTA 2020-21 virtual conference offerings and a plaque.



# Breanna K. Calkins

Science Teacher North Hagerstown High School Hagerstown, MD

As a science teacher who teaches biology, honors chemistry, and advanced biomedical sciences, Breanna Calkins tries to be innovative in her practices. To create lasting memories, she relies on creativity, kinesthetic learning, visual experiences,

and technology. To meet these goals, she combines art and creativity with science. She has created a coloring review book for biology students and has other educational coloring books in the works. In previous school years, she's also created activities for students that include theater, including the use of stage makeup to model lacerations and contusions in forensic science class. Activities that integrate art in a science curriculum help increase student engagement and educate the whole child. The integration of laboratory practicals and other hands-on learning activities is paramount in any science education, and having these experiences regularly is something Calkins strives for. She tries to integrate technology often, so when the bears of Alaska's Katmai National Park gain weight to prepare for hibernation, her students analyze weight gain in images, vote for who they think will be crowned "Fat Bear Week Champion," and watch the bears gorge on salmon via live feed webcams. "Mrs. Calkins is without a doubt one of the strongest members of our team. She is an amazing science teacher and jumps at every opportunity to collaborate and help others in the building," says DeyJah Chappell, assistant principal at North Hagerstown High School and science department supervising administrator.

# ROBERT E. YAGER EXEMPLARY TEACHING AWARDS



#### Johanna Brown

Chemistry and Computer Science Teacher Pullman High School Troy, ID

In Johanna Brown's seven years at Pullman High School, it's taken her many years of incremental change and a few years of complete disruption to get to her model for effective teaching. Students need an engaging phenomenon to galvanize questions

and wonder. When all students feel that they can contribute, their selfefficacy grows. Brown and her chemistry teaching partner have changed the entire chemistry curriculum to be phenomena based, developing engaging phenomena that will build interest and skills in students for every unit. This included developing all activities, assessments, and visuals. In addition to using phenomena, reflecting has changed the sequence and grouping of concepts that she teaches. She creates moments of students being confronted with new information that do not match their previous schemata, which deepens curiosity about the "why" and creates a more powerful understanding of the how. She has presented for AACT on teaching remotely via simulations and digital manipulatives and hosted a stand-alone webinar on ungrading. She serves on the NSTA Committee on High School Science Teaching and has presented at numerous conferences. Stella Carman, Pullman High School graduate, shares, "I am extraordinarily thankful to have been Ms. Brown's student. She opened doors for me that I had yet to even realize were closed. Her example as a woman in STEM and her ability as a teacher to recognize my passion and potential before I did has played a huge role in my decisions for higher education. Above all else she gave me what only exceptional teachers can: the confidence in my ability to learn that which I was never comfortable with."

# SHELL SCIENCE TEACHING AWARD

Sponsored by Shell

This award recognizes one outstanding classroom science teacher (K–12) who has had a positive impact on his or her students, school, and community through exemplary classroom science teaching.

The three finalists receive a citation and expenses to participate in any of the NSTA 2020-21 virtual conference offerings. In addition to expenses, the awardee receives a check for \$10,000, formal citation, and commemorative clock.

#### 2022 Shell Science Teaching Award Recipient

#### Charles Hayes



Highland Oaks Elementary School Memphis, Tennessee Elementary Science Teacher

Charles Hayes believes that effective science teaching should be student centered and that science is best learned when students take charge of their learning while the teacher serves as a facilitator. Allowing students to investigate, ask questions, make mistakes

and discoveries creates the opportunity for students to increase their science literacy. Also, effective science teaching should foster the sharing of information within student groups. Involving students in activities that mirror the work of everyday scientists and engineers increases their interest in science/STEM careers and sets them up for success in science classes in later grades. Elementary science teaching should also offer multiple and ongoing opportunities for hands-on learning. This also offers opportunities for students to develop their problem-solving skills. Hayes believes that taking the time to develop well-designed student-centered lessons is essential. This helps students use their natural curiosity, develop group skills, and assists with social and emotional skills. His goal for each lesson is to give students opportunities to collaborate, investigate, and make sense of the world. Being able to participate in lessons designed with the three dimensions of science learning is key to successfully boosting their interest in science careers. Hayes's "mastery of the elementary science content and the level of excitement he shows for teaching is an asset to our entire science team," says Kedrick Cottrell, RTI Interventionist at Shelby County Schools.

# SHELL SCIENCE TEACHING AWARD

Sponsored by Shell

The two finalists receive a citation and expenses to participate in any of the NSTA 2020-21 virtual conference offerings.

#### 2022 Shell Science Teaching Award Finalist



Lacey Hoosier Buckeye High School Deville, LA Science Teacher

Lacey Hoosier's main contribution and goal when teaching science is reviving and then fostering a love for science and learning in today's youth. She believes that

all students can be successful if given the right tools and environment. Her philosophy is that if a student is continually given high expectations and high standards along with support, guidance, and a fun learning environment, then they will enjoy learning and will rise to those expectations. Her goal is to make sure that students not only know facts and understand ecological relationships, but are able to solve problems and develop a burning passion to love what they are a part of. Hoosier's goal for her teaching career has been to initiate change and allow students and community members to explore different perspectives while learning new information, eroding away the old ways and stigmas of learning. Hoosier incorporates many different styles of learning and hands-on activities. STEM skills are used daily in various tasks that can range from building Rube Goldberg machines, designing trashcollecting booms for local waterways, and programming 3-D printers to make functional copies of anatomical structures. To foster a love for science and interest in the subject matter, she has created original activities that students do each year, which allow students to explore unique topics while building team-building skills, problem-solving skills, and critical-thinking skills. "What Mrs. Hoosier has provided to her students has resulted in increased knowledge, practical applications, an awareness of the difference ecology makes, and real-life ways to affect their environment for the better," says Tony Ellis, science teacher at Buckeye High School.

# SHELL SCIENCE TEACHING AWARD

Sponsored by Shell

The two finalists receive a citation and expenses to participate in any of the NSTA 2020-21 virtual conference offerings.

#### 2022 Shell Science Teaching Award Finalist



#### Jennie Warmouth

Spruce Elementary Edmonds School District Linwood, WA Elementary Science Teacher

Jennie Warmouth approaches science instruction from a problem-based learning philosophy. All her instruction is student-centered, differentiated, connected to real-

world issues, and tied to an authentic call for action. She integrates aspects of literacy, communication, design, mathematics, and social-emotional learning within and across her science instruction. This is most vividly demonstrated through her students' abilities to generate and communicate solutions, recommendations, and results to real-world audiences of stakeholders. Warmouth is a unique full-time elementary school teacher who is also an active Learning Scientist. She conducts fieldwork; collaborates with environmental scientists; writes peer-reviewed papers; and presents her findings locally, nationally, and internationally. She brings this into the classroom by connecting her students with real-world data collection; environmental issues; and leaders in the fields of science, photojournalism, and wildlife rehabilitation. Her partnership with National Geographic has greatly influenced her approach to science instruction. She teaches science through the lens of the National Geographic Learning Framework, which strives to cultivate the "mindset of an explorer" through a developmental framework aimed at developing students' attitudes, skills, and knowledge about the world. Her classroom is a student-centered and interdisciplinary learning lab where the children's own lived experiences drive scientific inquiry. All learning begins with the students themselves before scaling up to local, regional, and global community perspectives. "As a leader in our educator community, Jennie is a sharp and proactive learner. She brings an extraordinary passion to her work and when you couple this with an unending dedication to all she pursues, it's clear that Jennie is a standout educator," says Kenie Richards Senior Director, Networked Communities National Geographic Society.

# SHELL SCIENCE LAB REGIONAL CHALLENGE

Sponsored by Shell Outfitted by Carolina Biological Supply Company

This award recognizes exceptional and innovative science educators, in K-12 school programs for their exemplary approaches to science lab instruction utilizing limited school and laboratory resources, and raise awareness and exposure of the outstanding work being done in the science education field in areas near Shell assets. Grand Prize winners have won lab makeovers and a trip with their administrator to participate in any of the NSTA 2020-21 virtual conference offerings.

# 2022 Shell Science Lab Regional Challenge Grand Prize Winner Elementary



**Gwenevere Jones** Jennifer Murphy-Feagin Craighead Elementary School Mobile, AL Mobile Asset

Gwenevere Jones's teaching philosophy is that science is best taught through

multisensory learning lessons. She believes that hands-on learning is one of the most effective ways to teach science. A teacher's role should be as a guide, a facilitator, and to some degree a mentor. She uses a number of strategies to teach science including hands-on learning through experiments and having students design their own learning. Students design their own questions and then use these questions to design their experiment. Jones strives to increase students' critical-thinking skills through the process of questioning. A lab upgrade provided opportunities for students to experience science handson. Students need exposure to a lab that has the materials that allow them to conduct learning experiences, collect data, and extrapolate on the data conducted. This benefits them across the curriculum. The upgrade gives students a front row seat to experience STEM careers that will benefit them in the future.

# SHELL SCIENCE LAB REGIONAL CHALLENGE

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# 2022 Shell Science Lab Regional Challenge Grand Prize Winner Middle School



#### Samantha Mendenhall

Port Allen Middle School Port Allen, LA Port Allen Asset

Samantha Mendenhall's science teaching philosophy is that students learn science better when there are connections to the real world. In her classroom she infuses as many real-world examples and current events to support her students' learning. Some of her classroom

strategies include cooperative learning, inquiry-based learning, technology in the classroom, and more. Instruction always revolves around her students. She plans with all of them in mind to be sure all students learn, including using differentiation strategies. The update to her science lab has changed her science classroom. She's added many materials and equipment, increasing the quantity of certain materials so that there's enough for multiple use across campus. Mendenhall will use the grand prize award to share with others how STEM is key. She will bring awareness to how her classroom uses realworld situations to learn and understand content, making connections with students' lives to explain important concepts. Sharing the meaningful learning going on in her classroom would promote the awareness of STEM and the important connections that can be made.

# SHELL SCIENCE LAB REGIONAL CHALLENGE

Sponsored by Shell Outfitted by Carolina Biological Supply Company

This award recognizes exceptional and innovative science educators, in K-12 school programs for their exemplary approaches to science lab instruction utilizing limited school and laboratory resources, and raise awareness and exposure of the outstanding work being done in the science education field in areas near Shell assets.

#### 2022 Shell Science Lab Regional Challenge Grand Prize Winner High School



#### Jessica Thomas

Pecos High School Pecos, TX Kermit Asset

Jessica Thomas feels strongly that most students learn best through a variety of activities, including a handson approach. As the facilitator of class projects, she expects students to explore and learn from their own

experiences while she makes suggestions and provides feedback. Throughout these projects, students use different academic skills such as communicating, questioning, and evaluating their progress. Thomas's school has been exploring the possibility of shifting its Principles of Applied Engineering classes down to the eighth-grade students. This change allows the school to offer even more advanced courses at the high school level. When this change is fully implemented, many project materials will be given to the middle school students. Those materials will need to be replaced at the high school level using grant funds. The award has helped Thomas completely transform her classroom. The updated workstations better allow students to work in large groups as well as store their project materials for the science lab. In addition, the National Science Teaching Association membership and website have improved her science teaching skills and helped her communicate with teachers in her subject area. Through her NSTA membership, she has connected with STEM teachers from all over the US to discuss ideas and issues.

Sponsored by Shell

This award provides support to outstanding diverse educators in pursuit of professional development with active participation at the NSTA National Conference on Science Education and serves to increase the science educator talent pool of minority educators to meet the education workforce challenge of the future.

The award consists of \$1800 to be used to participate in any of the NSTA 2020-21 virtual conference offerings. Recipients will be invited to attend a variety of workshops and presentations that are of particular interest to urban teachers at the annual National Conference. Up to seven awards will be given.



#### Sheena Carbaugh

Girls Leadership Academy Phoenix, Arizona Science Teacher

As co-chair of the science department Sheena Carbaugh has been at Girls Leadership Academy for five years teaching underrepresented students. This community of students includes women who are underrepresented in science with 90 percent belonging to minority groups.

Carbaugh wants her student community to have experiences that will change their lives, and she works to spark their interest in science. Carbaugh takes the time to get to know the students and builds trust with them. Her students deserve to be represented and she tries to make sure they are given the chance. To achieve her goals, Carbaugh helped create her school's implementation plan for the state's three-dimensional science standards. After the national conference experience Carbaugh is planning on sharing what she learned, which would show students that in science, learning never ends. Science is constantly changing and evolving, and students need to see that teachers are willing to learn just like students.

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#### **Arlevia Davis**



Mansfield Legacy High School Mansfield, Texas Science Teacher

If you walk into Arlevia Davis's classroom, you will witness students discussing science with their peers, working collaboratively in groups, participating in labs, and singing about science. Inquiry, the 5E model and

project-based learning are ways she provides instruction in her classroom. She also creates content-based science songs to help students remember. Students learn and remember information best in a classroom that is student centered and provides the opportunity for exploration, curiosity, and handson experience. Davis's students learn a lot of information through inquiry and discovery. When Davis attends the NSTA National Conference, she will attend sessions that will broaden her knowledge about NGSS and 3-D teaching. She also wants to strengthen her skills to effectively teach students of all abilities and cultures since her school is increasing in diversity; she wants to make sure she is well equipped with the knowledge to best serve all students. Davis also serves as an instructional specialist for her campus and can share her knowledge with the science teachers at her school and district.



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#### **Candace Edmerson**

Duncanville High School Collegiate Academy/ Duncanville ISD Duncanville, Texas Science Teacher

During Candace Edmerson's science education and professional teaching development experiences, she was typically the only (or one of a few) African American and/ or a woman of color. She is very passionate about urban

science education and decided to teach so there would be more representation of underrepresented groups. She holds a master of education degree in secondary teaching and has 13 years of teaching experience. She has served as a mentor to other teachers and provided additional support and resources when needed to promote the overall goal of student achievement. She has also written and reviewed curriculum and served on various committees to review technology, as well as reviewed manuscripts for publication. She also participated in the Wipro Science Education Fellowship, which is hosted by UNT Dallas, School of Education. She strives to consistently stay abreast of researched-based best teaching practices and pedagogical strategies for the overall success and achievement of all her students. Her goal is to continue to be a lifelong learner. She plans to attend the NSTA National Conference in Houston and is looking forward to learning new strategies that will equip her with tools and skills necessary for professional and personal growth.

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**Carla Marie Neely** Warner Girls' Leadership *I* 

Warner Girls' Leadership Academy Cleveland, OH Elementary Science Teacher

Carla Marie Neely has been a science teacher for 13 years. At Warner Girls' Leadership Academy (WGLA) she teaches fifth- and sixth-grade science and integrates computer science into her instruction. WGLA is an

African American all-girls school located in the second largest school district in Ohio. Neely teaches science using the 5Es (Engage, Explore, Explain, Elaborate, Evaluate) and shows students how to use the engineering design process when working on projects. She is the leader of the fourth- through eighth-grade science department and also created the school's first science fair. She is a member of NSTA's Preschool-Elementary Science Teaching Committee. She is also a member of the Science Educational Council of Ohio (SECO) and the Cleveland Regional Council of Science Teachers (CRCST). Previously, she was the fourth- and fifth-grade science and math teacher at another school where she was the science fair committee chairperson. She was a part of the state-appointed New School Design Team whose responsibilities were to redesign the direction of the failing school. As part of a team, Neely helped redesign the school into a scientific inquiry-based school.

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#### **Christal Scott**

Crystal Hill Elementary School North Little Rock, Arkansas Elementary Science Teacher

Christal Scott believes that science is a critical part of motivating and inspiring her students. Scott is currently in her second year as an educator at Crystal Hill Elementary, which has prioritized increasing student

ability and confidence in reading. With reading as the priority and no science curriculum, she became resourceful in how to implement science instruction. She combined the content area of reading and science to strengthen her student's literacy skills and engage them as scientists. To build upon students' knowledge, she begins science exploration with reading to set the foundation. From an identity lens, she has included historical and present-day references of scientists that reflect the identity of her students, incorporating videos, student discussion, and questioning to increase higher-level thinking. When students reach the experimentation stage, they have gained a strong foundation in the topic, working together with specified roles to execute the experiment properly. With her science implementation Scott hopes to ignite a spark in her students that inspires a passion for science. Scott would greatly benefit from attending the NSTA National Conference because the new knowledge would improve her science instruction through literacy and other content areas.

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#### Eunique M. Sharman

Odyssey Academy Galveston Galveston, Texas Science Teacher

Eunique Sharman's educational background contains informal and formal education experiences, including as a Texas A&M Sea Camp counselor and Sea Camp Program Coordinator where she developed and created a grantbased program for low socioeconomic students. The camp focused on STEM and Maritime Careers Pathways

and partnered with local universities and STEM companies. While working, Sharman completed her Texas Teaching Certification Program and became a seventh-grade science teacher. Within her six years of teaching in the classroom she has increased student engagement in academic organizations she sponsors (NJHS, Secondary Campus Lighthouse Team, and Student Council). She has also received numerous STEM-based grants to develop realworld connections to the content taught in the classroom. Sharman believes students need true exposure to the world we live in so she strives to provide scientific educational opportunities for them. Sharman builds relationships with her students by using hands-on experiences and activities. She has high expectations for her students who meet her expectations with her continued guidance, assurance, skill, and knowledge.

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#### Selene Verhofstad

Dobie High School Houston, Texas Science Teacher

Selene Verhofstad has been a science teacher for over eight years and has taught chemistry for the last five years. In the past four years, she has been part of the early college high school in her district. This schoolwithin-a-school model serves "middle" students who may need extra help moving toward college-ready material.

Verhofstad has been able to move these "middle" students to do work that is beyond what goes on in a regular classroom. She scaffolds everything that she teaches. For example, students work all year around the idea of scientific inquiry. She starts the year with structured inquiry, where students are given directions for their problem. Students then move to guided inquiry: Verhofstad tells students to complete chemical reactions but doesn't share which chemicals to use. She guides them toward certain reactions but they must analyze them for their properties to come up with their final product. In the second semester, students do more open inquiry. Students also engage in engineering challenges such as "Having a Ball with Chemistry and Engineering" where students work together to build an affordable bouncy ball. Students learn about the importance of trial and error and being okay with failing.

# SYLVIA SHUGRUE AWARD FOR ELEMENTARY SCHOOL TEACHERS

This award honors an elementary school teacher who has established (or is establishing) an interdisciplinary, inquiry-based lesson plan. The lesson plan will fully reference sources of information and any relevant National Science Education Standards and benchmarks found in the Atlas of Science Literacy.

The awardee receives \$1,000 and up to \$500 to participate in any of the NSTA 2020-21 virtual conference offerings.



#### Darcie Fregoe

Elementary Science Teacher/Massena Central School District Madison Elementary School Massena, NY

Darcie Fregoe is a project-based, interdisciplinary

elementary science teacher who has students take their science knowledge and explore the school/school grounds looking for areas to improve. After learning about carbon footprints one year, the children discovered the older lights throughout our building were using lots of electricity. They made a presentation to the school board, which led the board to approve LED lights to be installed throughout the district. Another year, her students started a recycling program and taught the benefits of recycling to younger students. The following year, students discovered that many papers being recycled were only used on one side, so they purchased boxes to store partially used papers to be used for scratch work. Another year, Fregoe and her students visited the National Weather Service and accessed and analyzed their town's historic weather data and discovered that their town is experiencing climate change. She helps her students develop a new level of consciousness about Earth, its resources, and their role in it. They are making positive changes in and around their school and becoming more responsible for the Earth. "Darcie uses a variety of teaching strategies to hook her students' attention and increase retention. Students participate in songs, dances, plays, games, and scenarios as part of Darcie's science class. Not only does she deliver the content in a thrilling and engaging way, but she also invites guests into the classroom to reengage students in those topics," says Carly Watson, sixthgrade ELA teacher, Madison Elementary School.

## VERNIER TECHNOLOGY AWARDS

Sponsored by Vernier Software & Technology

This award recognizes the innovative use of data collection technology using a computer, graphing calculator, or other handheld in the science classroom. Each awardee receives a check for \$1,000 and up to \$1,500 toward expenses to participate in any of the NSTA 2020-21 virtual conference offerings. In addition, the awardee receives \$3,000 in Vernier products.

#### High School Level

#### Crystal McDowell



Secondary Science Educator, Science Department Chair Greenbrier High School Evans, GA

Vernier data collection technology has played an important role in Crystal McDowell's teaching. One of her favorite projects her first year at her current school was a STEM project where students designed a rooftop

garden model and compared it to a building model without the rooftop garden. Her environmental science students used surface temperature sensors to monitor the temperature for each of their models for comparison. She is now teaching anatomy and physiology for the first time, but there are very few sensors for anatomy and physiology. Her goal is to highlight awareness of the obesity health concern in her anatomy and physiology classes while exposing students to real-time data collection of their own vital signs. Students will learn about various body systems and the impact that obesity can have on those various systems. Students will learn how to analyze data about their own health collected from Vernier sensors to monitor one's health. She wants to start building a collection of anatomy and physiology sensors for students to use to study the physiology of the human body. Lisa Guilbeau, Greenbrier High School assistant principal, says McDowell "consistently invests in giving of her time and energy to young people. She instills in them an engaging experience with authentic labs that infuse a real love for science! Even in challenging times due to COVID-19 she has found a way to give her students real life learning experiences."

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#### High School Level

#### Olivia Kuper



Chemistry & Scientific Research Teacher Blountville, TN

Olivia Kuper believes that students at North Greene High School need modern tools to collect, analyze, and present data in scientific investigations for chemistry, physical science, and scientific research. Students that collect their own data using the modeling method of

instruction use Vernier probeware to develop conceptual models that foster a deeper understanding of the science content. In 2019 Kuper was teaching high school chemistry at a large, suburban high school in Texas where her students had access to Vernier probeware that helped students develop deep, conceptual knowledge of chemistry. During the COVID shutdown Kuper moved to rural Appalachia in Tennessee and began teaching chemistry at North Greene High School. There is little probeware at North Greene, and much of what is available is out of date. Science content must be accessible for all students. Students at North Greene High School in chemistry, physical science, and scientific research need opportunities to gain experience using modern tools to have a greater understanding of science. Using Vernier probeware will connect these rural Appalachian students to the actual practices of scientists. By emulating scientific practices, students will become competitive with those students with greater access to these materials. Amanda Weems, principal at North Greene High School, shares that Olivia Kuper "captivates students and inspires them in the classroom. She is very involved in professional growth and is always excited to learn new things."

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#### Middle Level

#### Eric Sullenberger



Physical Sciences Teacher Russia Local School Troy, OH

Eric Sullenberger believes that students learn best and are engaged the most when they have hands-on experiences in science. He has designed his courses to be as laboriented as possible. However, some lab activities can become very tedious when it comes to collecting and

graphing data. Data collection has been an important asset in his physical sciences classes. Using sensors has lowered the difficulty of labs and enabled students to focus on analyzing and understanding the data in depth. However, his rural school has a limited number of these tools. One innovative use of the technology was to analyze light and temperature data collected during the 2017 eclipse. With additional materials his plan is to try new lab ideas including creating topographic maps with GPS sensors, collecting realtime weather data, measuring weather data at different elevations with the aid of a drone, and applying science to farming. Steven J. Rose, Superintendent at the Russia Local School, shares, "Mr. Sullenberger has a true love of science and is one of the best high school science teachers that I have ever worked with. He has a natural ability to bring the subject matter to life, and his passion for science and teaching is evident within the classroom. He has a true love for learning and in his career has earned two master's degrees and continues to challenge himself to learn new disciplines to advance his personal knowledge."

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