

The Reflector



North Carolina Science Teachers Association

Editor Dr. Mary Ellen Durham

November 2024

IT JUST KEEPS GETTING BETTER! 2024 PDI



The Benton Convention Center in Winston Salem, NC was “rocking” November 7 and 8, 2024, as NCSTA hosted its annual Professional Development Institute. The conference focused on providing professional learning and collaboration, opportunities for attendees to hear from nationally recognized science educators, content-relevant concurrent sessions, cutting-edge educational resources, opportunities to win mini-grants and prizes, celebration at the annual awards ceremony and reception, and interaction with both old and new professional colleagues.



NCSTA 2024 President



The 2024 NCSTA PDI (Professional Development Institute), themed “**Rockin' Out with the New Science Standards**”, was a resounding success! The conference offered an incredible opportunity for science educators from across North Carolina to connect, learn, and grow. With over 130 engaging presentations led by seasoned educators, attendees had the chance to delve into a wide range of topics, from inquiry-based learning to DEI integration. Keynote speakers captivated the audience with their inspiring messages and practical advice. The reception provided the perfect opportunity for networking, while the continental breakfast and free morning coffee fueled participants throughout the event. PDI attendees were thrilled while visiting the extensive vendor hall that offered a wealth of information and free supplies to support effective science education.

As we reflect on this year's successful PDI, we are already excited to announce the theme for next year's event: “**Science is Phenomenal**”. Mark your calendars for November 6 & 7, 2025, and join us for another incredible learning experience! Thank you to all who attended and made this year's PDI a memorable one.

Adrienne Evans



2024 NCSTA Life-Time Achievement Award

Dr. Clinton L. (Jake) Brown received the NCSTA Life-Time Achievement Award at the 2024 PDI Awards Ceremony. Dr. Brown has been a critical player in science education in North Carolina for over 60 years and active in the Association for 51. His long and varied career includes teaching biology at Tuscarora High School, (Haywood County, N.C.) and 26 years with the North Carolina Department of Public Instruction. At DPI, he worked extensively with staff development, conducted hundreds of teacher workshops, and engaged in curriculum development. Dr. Brown was instrumental in the planning, development and implementation of the state's first K-12 science testing program and participated in the instructional materials review and text adoption process. He also assessed hundreds of school designs to ensure science classrooms met instructional and safety needs. Upon his retirement from DPI, he taught science and science methods classes at UNC Central, East Carolina University, Wesleyan College, Mt. Olive University and Campbell University. Dr. Brown served many years as the DPI Liaison on the NCSTA board and is a former editor of the Association's newsletter.

NCSTA created the Life-Time Achievement Award as a tribute to Dr. Fredrick Beyer whose legacy as a champion for North Carolina's science teachers and decades long leadership in the Association remains an inspiration for all science educators. This honor may only be given to individuals exhibiting extraordinary accomplishments and commitment to the organization and to the enhancement of science education. It is the Association's most prestigious honor.



NCSTA 2024 AWARDS

John Park High School Student Teaching Award

Faelynn Willams: West Cabarrus High School

Elementary School Outstanding Science Teaching Awards

District 1: Rebecca Pashnyak, Knott's Island Elementary School

District 2: Tamika Gaskill, Northeast Elementary School

District 3: Mandy Jenkins, Gardners Elementary School

District 5: Maggie Caldwell, Shady Grove Elementary School

District 6: Adam Haas, Rocky River Elementary School

District 8: Kathry Thompson, Bruce Drysdale Elementary School

Middle School Outstanding Science Teaching Award

District 2: Judy Cleary, Greene County Middle School

District 4: Hampton Miller, Fairmont Middle School

District 5: Orna Sabas, Northern Guilford Middle School

District 7: Brett Lewis, Ashe County Middle School

District 8: Elizabeth Webster, Cane Creek Middle School

High School Outstanding Science Teaching Award

District 2: Ashton Allgood-Batten, Richlands High School

District 3: Rachel McNeill, Hunt High School

District 4: Jessica Maldonado, Southern Lee High School

District 6: Brian Johnson, East Gaston High School

District 8: Heather Roof, Rutherford Early College High School



NCSTA Distinguished Awards

Jo Duckett Wallace Distinguished Elementary School Service Award

Jean Palezo,
Vanstory Hills Elementary School



Ann Watkins Distinguished Middle School Service Award

Savannah Brown,
Hunter Creek Middle School



Ann & Bill Palmer Distinguished Administrator/Supervisor Service Award:

Dr. Christine Mitchell,
Wilson County Schools



Dr. Donald Bailey Distinguished College/University Service Award:

Dr. Natalie Aman,
ECU College of
Engineering and Technology



Non-School Setting Distinguished Service Award:

Dr. Garrie Moore,
Bethel Youth Activity Center



Distinguished Service Award-Commercial:

Glenn Davenport,
American Book Company



2024 Vi Hunsucker Award

Michelle Chadwick received the 2024 Vi Hunsucker Award for her work serving the students and teachers of North Carolina. Michelle is the Assistant Director of Advanced Learning and STEM in Onslow County Schools and Project Director for the Military Connect Academic and Support Program (MCASP). In these capacities she facilitates professional development programs for science teachers and assists with the operation of science-related student competitions. Chadwick has over 15 years of instructional experience and holds an undergraduate degree in Biology and a Masters in School Administration and Curriculum Instructional Specialist. She is also licensed in Academically and Intellectually Gifted Instruction



Congratulations



Increase Attention - & - Spark Curiosity



Excite Students



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Engage your students with Plasma Games resources and digital interactive activities - you have ACCESS! Plasma Games is grant funded through DPI making it available to your district at no cost. Sci-Ops: Global Defense is statistically proven to improve learning, motivation and confidence in 6-12 middle school, chemistry, and physical science courses..



SIGN UP for a webchat today to learn how to gain access to the Plasma Games platform and get details about how to apply for our NCDPI grant!

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Preconference Field Trip

On Wednesday evening, prior to the PDI, a party of 29 science educators participated in a preconference enrichment field trip to the iconic Pilot Mountain State Park. Participants were able to explore the rugged terrain of the monadnock, interact with park rangers, investigate the natural science exhibits in the Visitor Center and enjoy the sunset from the overlook atop the "mountain". Attendees learned about monitoring of migrating hawks, prescribed fire practices and the science of protecting resources found in the park and the surrounding Yadkin River valley. The office of Environmental Education, North Carolina State Parks, and the UNC-Institute for the Environment partnered to sponsor the event.

Registration

The lobby of the Benton Convention Center was bustling with excitement as PDI attendees stopped at the NCSTA registration booth. Hugs, high-fives, and shouts of hello were heard everywhere as educators picked up their name tags, lanyards and tote bags.

Questions were answered, Sched was referenced, directions to rooms were given and anticipation grew as attendees hurried to concurrent sessions.



Concurrent Sessions

Over 130 concurrent sessions were presented during the two days of the PDI focusing on three strands.

- **As the world turns: bringing the spheres together.** In these sessions educators explored activities that connected earth and environmental science concepts to the other science disciplines.
- **Strategies for engaging learners to meet the new science standards.** Participants shared inquiry-based lessons that align with the latest science standards, cultivate reasoning and problem-solving abilities, and provide learners hands-on experiences that make sense of phenomena in science.
- **Meeting the needs of our diverse learners.** Attendees shared strategies and lessons that create equitable access to quality science education for every learner. Sessions focused on inclusion and differentiated instructional approaches.



Dr. O'Donnell Address

Submitted by: Dr. Carol Maidon



Research on the importance of how science is taught was presented by Dr. Carol O'Donnell, Director of the Smithsonian Science Education Center. Entitled 'How High-Quality Transdisciplinary Science Programs Can Improve Science, Reading, and Math Scores', she distinguished between terms that are used to indicate increasing levels of STEM+M (disciplinary, multidisciplinary, interdisciplinary and transdisciplinary) via illustrations of ice cream (one flavor, multiple flavors, a sundae, and a milkshake respectively). Transdisciplinary teaching is distinguished by the use of real-world problems, phenomena and knowledge/skills from two or more disciplines as utilized in the Smithsonian science curriculum.

She cited studies using this curriculum. The first longitudinal 3-year study used 60,000 middle school students and 1900 teachers annually from three states (TX, NC, NM). The results showed students applied what they learned to real world problem solving, scored higher on their end of grade science tests, and reading and math scores were higher. The second study was a 5-year longitudinal study conducted by the University of Memphis Center for Research in Educational Policy using the Smithsonian Science for the Classroom. They followed a cohort of approximately 7,250 students in grades 3 to 5 with 300 teachers primarily in rural areas in North and South Carolina. It is notable that this study took place between 2019 and 2024 – during what has been identified as a learning loss time due to the COVID-19 pandemic. The results indicated that these students made statistically significant gains in science as measured by the Stanford Achievement Test (7 percentile points). When students were disaggregated by underrepresented groups in STEM (females, the economically disadvantaged, those with individualized education programs, and those who are Black, Indigenous, people of color) they still outperformed their peers in science, with the difference for females being statistically significant. Students in the treatment group also performed better as measured by their state's assessment in math and reading. For more:

<https://ssec.si.edu/sites/default/files/EIR%20Executive%20Summary.pdf>

O'Donnell presentation:

<https://public.3.basecamp.com/p/BTDXNjr7TrNQrdTWLz9e79Wa>



Reality Check

The Association hosted Reality Check, a pizza party and informal session exclusively for preservice teachers on the first day of the PDI. Over 30 undergraduate education majors, student teachers and pre-service educators attended, hailing from Pembroke University, Campbell University, Pfeiffer University, UNC-Wilmington, and Appalachian State University. As the young educators enjoyed a pizza buffet, Dr. Mary Ellen Durham welcomed them to the PDI and explained the benefits of membership in the Association. Following the welcome, NCSTA Board members Adrienne Evans, Brian Whitson, Brad Woodard, and veteran teacher and NCSTA member Michael Giddens shared personal classroom anecdotes, offered instructional and class management suggestions, and answered attendees' questions. NCSTA commends these preservice teachers for their career choices.



Past President's Luncheon

Each year, NCSTA offers a special event at the PDI for the Association's former presidents as a thank you for their service and commitment to enhance science education throughout the state. This year's event, hosted by long-time NCSTA member Dr. Jake Brown, was held at Tulum Restaurant in downtown Winston-Salem, N.C. Those attending were Dr. Pat Shane, Dr. Sam Wheeler, Dr. Carol Maidon, Manley Midgett, Mark Case and others. Special guest, Dr. Carol O'Donnell was also in attendance. Spirits were high as these former NCSTA leaders enjoyed delicious cuisine, joked, reminisced, and discussed contemporary educational practices.



NCSTA Awards Ceremony and Reception

PDI participants gathered in the Winston Ballroom of the Benton Center on Thursday evening to celebrate science education in North Carolina and to recognize the 2024 NCSTA award winners. A cash bar featuring wine, beer and beverages was available and attendees were invited to enjoy the heavy hors d'oeuvres buffet.

The annual awards ceremony followed the reception, emceed by NCSTA District 1 Director and Awards Committee Chair, Jennifer Stalls. Throughout the program raffle tickets were drawn and a wide range of valuable prizes, including instructional supplies, classroom sets, and gift cards were awarded to the lucky ticket holders.

The 2024 NCSTA winners for the district level Outstanding Elementary, Middle School, and High School were announced, and the Distinguished Service Awardees for Elementary, Middle School, Administrator/Supervisor, Non-School Setting, and Commerical Service were also identified. The ceremony ended with the announcement of the Vi Hunsucker and Life-Time Achievement awards.

In addition to the NCSTA awardees, Courtney Ella, Jean Pelezo, and Rebecca Wyland, all elementary teachers, were recognized as finalists for the Presidential Award for Excellence in Mathematics and Science Teaching. Dr. Pat Shane was named as the North Carolina Science Leadership Association's 2024 recipient of the Michael C. Jackson Distinguished Service Award.

Tom Savage announced the following as winners of the 2024 Grant Me a Wish mini grants.

Rebecca Pashnyak, Knotts Island Elementary
Mini coding robot

Lindsay Stalls Eastern Elementary
Set of charging stations for tablets and robots

Aubrey Diorio, Turner Creek Elementary
Indoor Greenhouse with grow light

Rebeccah Hains, Broad Creek Middle
Roller coaster design kits for energy studies

Paige Norris, Rocky River Elementary
Painted Lady Butterfly Kits

Chrissy Williams Rocky River Elementary
Painted Lady Butterfly Kits

Jennifer Griffen, Swansboro High School
Dell Differentiation and Gene Expression Kits



PDI Strategies

Similar to researchers who often approach a scientific question using several different approaches, the 2024 PDI attendees participated in the conference using a variety of techniques.

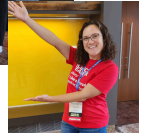
Large Groups



Campbell University preservice teachers



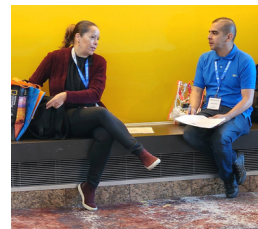
Cabarrus County Science Teacher Entourage



Small Groups



Pairs



Solo



A Perfect Start for the Day

The second day of the PDI was jump-started with a complimentary morning meal. The Benton Center concourse was alive with laughter and conversations as conference attendees helped themselves to the breakfast and coffee bars.



Dr. Mabry Address

Submitted by: Dr. Carol Maidon



Dr. Nehemiah Mabry, P.E. (affectionately known as Dr. Nee) is an Engineer, Educator and Entrepreneur based in Raleigh, North Carolina. He is currently the host of PBS's NOVA Twitch show, 'Building Stuff', which showcases engineers who solve design problems in creative ways. Dr. Mabry is also a dynamic, energetic, passionate, and magnetic speaker who entertained us while imparting critical knowledge on the importance of reaching and teaching every student. He began his address by relating a story from his childhood. At the early age of four he inadvertently was involved in a squabble at his school and used his four-year-old rational reasoning skills to make sense of what happened. Although reprimanded for his part in this incident, he tried to explain his logical involvement. Luckily, a teacher recognized his deduction and analysis of the situation, although clearly flawed, as an indication of an extremely insightful and promising student whose curiosity needed nurturing. Thus began his journey into STEM education, all due to a teacher that recognized his penchant for questioning, reasoning and learning.

Now his passion is in developing educational STEM content through digital media and writing, directing, and producing science and engineering content for television and international programs. Therefore, he focused his presentation on the imperative of utilizing the diverse creative and cultural competencies of our students to foster further interest in science education.



NCDNCR Update

Reid Wilson, Secretary of the North Carolina Department of Natural and Cultural Resources (NCDNCR) provided a status report on the impact of storms and climatic changes on North Carolina, including rising water along the coastline and the destruction within the mountain regions. Wilson also clarified how our many parks, museums, aquariums and other facilities work to preserve and protect the resources and heritage of the state. Included in his remarks was information on how NCDNCR offers professional development opportunities and resources for science teachers.



Rising Stars

Lakeforest Elementary Beginning Teachers Present at NCSTA PDI

Submitted by: Jennifer Stalls



Congratulations to Chasity Pate and Willicia Johnson from Lakeforest Elementary School in Pitt County, who presented "STEM Success for Beginning Teachers" at the 2024 NCSTA Annual PDI! This was a milestone for both teachers, as it marked not only their first time attending the conference but also their debut as presenters. Chasity, in her third year of teaching, and Willicia, in her second, are already recognized as dynamic leaders within their school and community. Their presentation highlighted effective strategies for new educators to achieve success in STEM, showcasing their commitment to advancing STEM education for all students.

PDI First Timers

The NCSTA Board of Directors welcomed many first-time attendees to the 2024 PDI. As these newcomers registered, they were asked to attach a special ribbon to their name badges so NCSTA members and those on the Board could meet and speak with them. These new colleagues added fresh and new perspectives to the conference and their participation was greatly appreciated. The NCSTA Board encourages them to join us again in 2025.

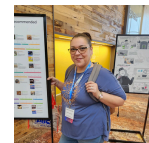
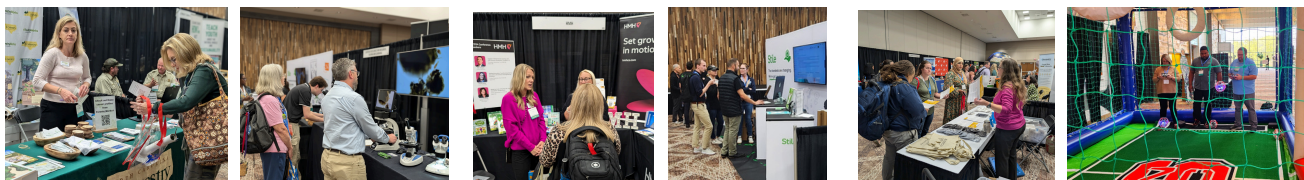


Exhibit Hall

The extensive exhibit hall was open on both days of the PDI providing multiple opportunities for conference attendees to explore the wide range of science education resources that were displayed. As educators strolled through the hall, vendors were available to showcase their respective resources. The exhibit hall was bustling as science teachers previewed the latest science texts, classroom kits, specimens, and study guides. Many chose to critique cutting-edge instructional media and technology. Others tested lab-ware, instruments, and scopes. Many chose to learn about educational facilities such as the North Carolina parks, conservancies and museums. There were also opportunities for attendees to discover how state agencies and professional associations are able to partner with science educators to provide resources and science-related learning experiences for both teachers and students. Rarely did someone leave the hall empty handed as the teachers filled their tote bags with free handouts, maps, charts, and samples.

Periodically throughout the PDI, the exhibit hall hosted the popular Spin-A-Wheel drawings. Attendees collected Spin-A-Wheel tickets at registration, the general session and other conference activities. Each ticket provided the holder an opportunity to win outstanding instructional resources and fabulous prizes donated by the vendors. This process was simple and fun. At designated times, excited PDI attendees would gather near the wheel to participate in the excitement of the prize giveaways. At the end of the conference attendees gathered outside the exhibit hall in anticipation of the final prize drawings. The lucky winners received the grand prizes: a substantial gift basket filled with office supplies and gourmet snacks, as well as **3 one hundred dollar Amazon gift cards!**

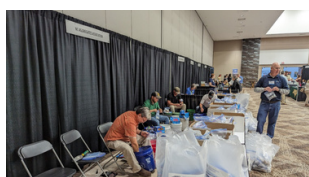


Rock and Mineral Giveaway Exhibit



Hollywood may have Dwayne ‘the Rock’ Johnson, but a full cadre of ROCK MEN were present at the 2024 PDI! Manning the Rock and Mineral Giveaway Exhibit, these men of stone provided those attending the PDI with information and educational materials regarding North Carolina’s diverse mineral industry and varied geography. Participants collected samples of the state’s rocks and minerals, as well as an identification key in a take-home rock kit. Videos, posters and instructional materials focusing on North Carolina’s geology, unique landforms, rocks, minerals and mining operations were also available. The exhibit was jointly sponsored by the NC Aggregates Association, the Carolinas Section of the Society of Mining Engineers, the NCSU Asheville Minerals Research Laboratory, and other geologic and minerals societies.

The North Carolinian Aggregates Association offers additional resources for the state’s science teachers at <https://www.ncaggregates.org/education/about-geology>.



Teaching Tip: What to do with those Rocks!!

Submitted by: Cliff (rock guy) Hudson

Have you ever wondered what to do with the rocks you received at the science conference? Here you go! This lesson can be tailored to different levels and changed to meet the needs of your class and students. This can be done as an introduction to rocks activity, after more detailed instruction on rocks has occurred, or as both.

After providing guidelines regarding the procedures associated with this activity, pass out the samples. They are numbered in the rock sample kits, or you can put them into a different container and number. (This lesson is a great opportunity to integrate writing, and students could record their information on a chart/thinking map to compare the rocks).

- o Ask the student to describe each numbered sample. (Depending upon the level of the students, they may need teacher assistance with the first few samples).
- o Have the students state/write their description in their own words: What does the rock look like? What is the color/colors of the different pieces (minerals)? How does it feel? What do they see as to the rock's texture, particles or no particles? (Remind them that minerals make up rock and can't been seen). Students record their findings.
- o Have students then identify the type of rock (igneous, sedimentary and metamorphic). Upper-level students may tell you intrusive/inside or extrusive/outside igneous rock etc.
- o At this point, give the students a map of NC that has the three geographic regions (coastal plain, piedmont, and mountains). The students may need a review of this geographical information. Students should place each rock sample on the map where they think they could find the rock. There may be multiple correct answers.
- o Students should write where they would find the rock next to their observations and description from earlier. This should lead to some discussion and students can justify their answer with evidence or previously discussed ideas. This is a great opportunity for scientific discourse and rich classroom discussion led by the students.
- o Next, display a really good picture of each sample on the projector/TV. Depending upon the level of the students, identify each sample along with a detailed explanation/description of each.
 - For example: If sample 1 is granite you could post a picture and pass around another sample of granite for the students to examine, Have the students record any additional detailed information. "Granite is an intrusive igneous rock that is light colored due to being made from light colored minerals. Granite is the main rock that makes the continental crust."
 - More advanced students could discuss the mineral composition of the sample.
 - There is a detailed description of each sample on the key provided in the bagged rock sample kit. Please feel free to provide the details that are important for the students to know.
 - The key also lists specifically where in NC the sample was found. This may lead to further discussions concerning student assumptions of where certain rocks are and where the sample was actually collected.

Extensions for this lesson include:

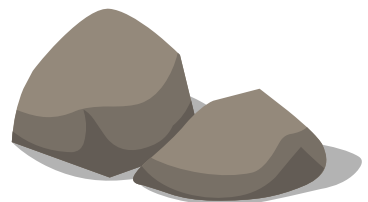
Class discussions or student research projects to determine the many ways humans use rocks and the importance of aggregate industry. There are many resources and videos on these topics.

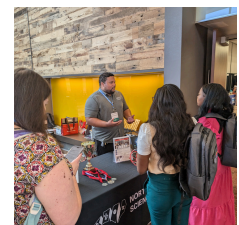
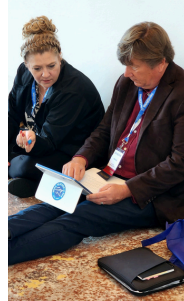
Students usually have little awareness of how important rocks are and how we use rocks, nor do they know that they use rocks inadvertently every day. Be prepared for student questions. This activity can be expanded or condensed depending on the grade level and standards being taught.

Resources that may be helpful:

<https://geology.com/rocks/>
<https://www.ncaggregates.org/education/about-geology/>
<https://www.deq.nc.gov/geoscience-education>

Any questions please feel free to email me: chudson@martin.k12.nc.us





Special PDI Moments



A Message to the Membership

As the NCSTA 2024 Past President I had the opportunity to serve as the Chair of the 2024 PDI Committee. I want to thank the entire NCSTA Board for all their hard work and contributions in making this year's conference so successful.

Thank you to all the vendors for such an outstanding exhibit hall. Your displays, demonstrations, and materials are what keep educators informed about the availability of instructional resources and help science teachers in the trenches each and every day.

I would also like thank all of the PDI attendees. Without you there would not be a conference!

Please let us know how we can make the experience better and I sincerely hope all of you return next year and bring a friend.

Regards,

Cliff Hudson



THANK YOU 2024 PDI SPONSORS

NCSTA recognizes our 2024 PDI sponsors for their support and on-going commitment to enhance science teaching and learning in North Carolina. Their advocacy and contributions are greatly appreciated.



Share Your District's Science Events

NCSTA wants to hear about the exciting science events happening in your district! If you know of upcoming science workshops, student competitions, webinars, or other events, please take a moment to fill out this Google form: NCSTA: What's Going On in Your District? <https://forms.gle/xpc9QEUGPO4hhHo38>

By sharing this information, our district directors can help promote these events and connect science educators across the state. Let's work together to foster a vibrant and collaborative science education community!



**See you in
November for PDI
2025**

**Benton
Convention
Center**

**Winston-Salem,
NC**

Examining and presenting phenomenon based
science through modeling:

Unleash the power of real-world phenomena to spark student
curiosity and critical thinking

Student centered learning using the New NC
Standards:

Explore innovative strategies for fostering collaboration,
creativity, and problem-solving skills

Nobody wins unless everybody wins!

Build a more inclusive and equitable science classroom that
celebrates diversity and reflects the world around us