



# The Science Educator

Spring 2021

A Publication of the Virginia Association of Science Teachers

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## ANNOUNCING 2021 PDI

Virtual: November 16 - 18

PDI Plus: November 19 - 20



### General Session Speakers

#### **Dr. Don Duggan-Haas**

Director of Teacher Programming  
The Paleontological Research Institution

#### **Dr. Carole Nash**

Director of Environmental Archaeology Laboratory  
James Madison University

#### **Dr. Joi Merritt**

Associate Professor of Science Education  
James Madison University



### NOW OPEN

- **Presentation proposals due July 2**
- **Hotel reservation cut-off date June 1**
- **Coming soon: PDI registration May 8**



# Virtual Mentors Assist Students to Do Research

Every May, the VA Junior Academy of Science (VJAS) enables students to meet together and share their research. Due to the pandemic, things have changed, but somehow for the better. Students still have strived with continued support from their teachers, and created mentorships from the Virginia Academy of Science (VAS). Remarkably, approximately 700 projects were submitted and not all multiple authored projects. Like the virus, we survived.

Where do we go from here? Hopefully, these teachers will join the efforts of the PDI and share their abilities to keep inquiry alive. Enthusiasm grows to expand next year to continue, due to the inability to get substitutes and the high cost of bus transportation. Yes, we plan to see each other in 2023 as VAS celebrates its centennial.

But for now, record attendance for public, private, home school students has moved the needle. With its uniqueness to share with fellow students and to meet in ZOOM rooms to be acknowledged for their hard work, but also to be able to talk with experts in their fields of study. What an honor to be a part of this movement. As Dr. Britton has stated in other writings..."You don't need to have Bunsen burners and glass flasks with boiling smokey stuff coming out of them to do good quality research." These are the opportunities that our teachers and sponsors provide to inspire their students' interests in the world today.

*Susan Booth, Ed.S.*  
**Executive Director**

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## 2021 PDI Update



Russell Kohrs, MS NBCT



Mark your calendars because your colleagues in VAST are planning on a fabulous PDI this coming November 16-20! Amid the uncertainty over COVID restrictions, substitute availability, etc. VAST is looking at a PDI that will once again be different than from anything we have done before. Different creates opportunity. This year we're planning on a wide variety of offerings for your professional development appetites. We hope the variety will appeal to the full range of interests and needs of our members. We're calling it "PDI Plus" and it will consist of online and in person options. For all options, our "Science, Systems, Solutions" theme will be explored. We'll see complex challenges being addressed by cutting-edge science everywhere we look and learn!

Last year's 2020 PDI was a rousing success, particularly considering the challenges involved with putting together a meeting with reduced planning and in a format never before attempted by VAST. Our leadership did learn a great deal from this experience and we are again planning a plethora of online options that will take place over several days from November 16-18. Similar to the 2020 format, these offerings will include online keynote speakers, concurrent sessions, sponsors, exhibit booths, and social opportunities. Again run through Whova, sessions will take place after work hours and run into the evenings. However, the social experience will begin weeks before and continue well after the PDI! We are calling this our "PDI" and it will feature an enhanced virtual experience that will include webinars and more. For all of our members, whether you can attend in person or only virtually, this is for you! Like last year, all sessions will be preserved for future PD in our VAST "VERSE" repository for our members to use toward professional recertification.

The "Plus" portion of the PDI will include in-person offerings in Harrisonburg, Virginia. Based at Hotel Madison, we are planning an exciting array of unique and hands-on experiences both on campus at James Madison University and the Harrisonburg area. These

include a chance to spend time in science labs where you'll learn about current research. You can choose to interact with spectrometers or work with sediment cores from the bottom of the ocean. You can tour the revamped and greatly expanded mineral museum or spend an evening in the planetarium. You'll also be able to go on field trips. One combo trip will take you deep into a rock quarry where you can see how limestone aggregate is mined and processed, followed by an excursion to a local industry that uses that aggregate to create items needed by businesses. Another trip, led by one of our keynote speakers, Dr. Carole Nash, will explore some local history through the interdisciplinary explorations of local archaeological sites. Others may include a local vineyard, the Mole Hill volcanic neck, and more! All of these experiences are included with a small additional registration cost.

We have an exciting lineup of speakers! Dr. Don Duggan Haas of the Paleontological Research Institute is not only helping to lead the Donna Sterling Institute that also occurs during the PDI, but he will also be speaking to us about best practices in teaching climate science. Dr. Carole Nash of James Madison University will speak to us about her archaeological work and how that science helps inform our understanding of the complex interplay between climate and human settlement patterns. Dr. Joi Merritt of James Madison University comes to us as a professor of Early, Elementary, and Reading Education and a background as a management consultant and chemical engineer. Our fourth speaker is Dr. Eric Pyle, President-Elect of the National Science *Teaching Association*.

We sincerely hope you will join us for the PDI this November - whether PDI or PDI Plus. It will be an exciting time of networking, learning, and exploration. Perhaps most of all, it will be a time for us all to breathe and reflect while also becoming energized by Science, Systems, and Solutions!

*Russ Kohrs, VAST President 2021*

Menu

# VAST Wants You!

## Be a Presenter this November!

*Presenters share what they know with others and affect students and educators far beyond their classrooms.*



## CONCURRENT SESSION PRESENTER INFORMATION

**2021 Virtual Professional Development Institute  
Tuesday, Wednesday, Thursday, November 16-18, 2021, 4:00pm – 9:00pm**

**VAST needs you! Share your good ideas! Submit a concurrent session presentation proposal for the 2021 Virtual PDI.**

Presentations may be live or pre-recorded. Detailed instructions and the online presenter proposal form can be found on the “annual PDI” page at [VAST.org](http://VAST.org).

The online proposal submission form is **due by July 2**. The PDI committee will review all proposals and presenters will be notified by early August regarding their submission.

The registration fee is \$75.00 for presenter-attendees and presenters who represent a not-for-profit institution. Not-for profit institutions are also encouraged to purchase a virtual exhibit booth. A commercial presenter must also be registered as an exhibitor and pay the \$150.00 per presentation fee in addition to the standard commercial exhibit fee.

All presenters must pay the registration fee no later than September 24 to be included in the in final program.

Complete PDI information can be found at [\*\*CLICK HERE\*\*](#)

Presenter proposal information and the link to the Presenter Proposal Form can be found at [\*\*CLICK HERE\*\*](#).

**QUESTIONS? Contact John Kowalski ([PDI@VAST.org](mailto:PDI@VAST.org))**





# 2021 VAST VIRTUAL PDI SCHEDULE AT A GLANCE

(Draft as of 04-28-2021)

## “Science, Systems, Solutions”

Virtual Exhibit Hall is available throughout the PDI

Pre-recorded presentations are available throughout the PDI

Be sure to check out the Community button on the WHOVA app! You will be able to take part in discussion boards on teaching strategies, content areas, and even propose discussion topics of your own. This is a great networking feature to explore!

(Be sure to check out the information on the In-Person PDI Plus, next page)

### **Tuesday, November 16**

3:30 pm – Welcome to the PDI

Russ Kohrs – VAST President

4:00 pm – 4:45pm: Concurrent Session One - Live Presentations

5:00 pm – 5:45 pm: Concurrent Session Two - Live Presentations

6:00 pm – 6:45 pm: General Session One

Dr. Don Duggan-Haas, Director of Teacher Programming, The Paleontological Research Institution

Title: “It’s Too Late. Let’s Get to Work Anyway.”

7:00 pm – 7:45 pm: Concurrent Session Three - Live Presentations

8:00 pm – 8:45 PM: Concurrent Session Four - Live Presentations

### **Wednesday, November 17**

4:00 pm – 4:45pm: Concurrent Session Five - Live Presentations

5:00 pm – 5:45 pm: Concurrent Session Six - Live Presentations

6:00 pm – 6:45 pm: General Session Two

Dr. Carole Nash, Director, Environmental Archaeology Laboratory

Title: “Spinning Stories: The Science of Archaeology and Complex Problem Solving”

7:00 pm – 7:45 pm: Concurrent Session Seven - Live Presentations

8:00 pm – 8:45 PM: Concurrent Session Eight - Live Presentations

9:00pm – Treasurer’s Report, Matt Scott (pre-recorded)

### **Thursday, November 18**

4:00 pm – 4:45pm: Concurrent Session Nine - Live Presentations

5:00 pm – 5:45 pm: Concurrent Session Ten - Live Presentations

6:00 pm – 6:45 pm: General Session Three

Dr. Joi Merritt, James Madison University

Title: “Systems for Success in the Elementary Science Classroom”

7:00 pm – 7:45 pm: Concurrent Session Eleven - Live Presentations

8:00 pm – 8:45 pm: General Session Four

Dr. Eric Pyle, President, National Science Teachers Association

Title: TBA

9:00 pm: PDI Closing and Welcome to the 2022 PDI

Becky Schneker, VAST President Elect

## 2021 VAST IN-PERSON PDI PLUS

### SCHEDULE AT A GLANCE

(PDI Plus is an Add-On to the Virtual PDI) (Draft as of 04-29-2021)



**PDI +**

Come enjoy exciting field trips deep into a rock quarry, to a pre-cast concrete planet, an extinct volcano, and to taste some of the local viticultural products!

Come and experience some authentic research lab experiences led by James Madison University professors in their own labs!

Come and enjoy shows at the JMU planetarium and recently expanded mineral museum!

Come on Friday for the quarry field tip and then enjoy a “Night on the Town: Science, Systems, and Solutions in the City”. It will be a fun scavenger hunt!

#### **Friday November 19**

2:30 pm – 5:30 pm	Choose from: Field trip to Frazier Quarries and the Rockingham Pre-Cast Mineral Museum Planetarium Show
6:00 pm – 7:00 pm	Dinner – Meet up with teachers and dine together in downtown
7:00 pm -	“Night on the Town” with a “Science, Systems, and Solutions” Scavenger Hunt

#### **Saturday, November 20**

8:00 am – 9:30 am	Breakfast (included with the registration)
9:30 am – 11:30 am	Choose from six authentic research lab experiences offered by JMU faculty
11:30 am – 1:00 pm	Lunch (included with the registration)
1:00 pm – 3:00 pm	Choose from six authentic research lab experiences offered by JMU faculty
3:15 pm – 5:30 pm	Choose from several in-person field trip opportunities

Various Times Both Days TBD Mineral Museum, Planetarium Shows

**Virginia Association of Science Teachers  
2021 Virtual Professional Development Institute  
General Session I  
Tuesday November 16, 6:00 pm – 6:45 pm  
“It’s Too Late. Let’s Get to Work Anyway”**



**Dr Don Duggan-Haas  
Director of Teacher Programming  
The Paleontological Research Institution**

It is too late to prevent horrible consequences of climate change, but when it’s too late is when we generally get to work. We ended slavery too late. We stopped Hitler’s genocide too late. We got to work on civil rights and getting out of Vietnam too late. We began our response to Covid-19 too late. Being too late doesn’t mean that it’s too late to do something. It means we’re already letting people suffer, but we can prevent future suffering. Addressing climate change is a wicked interdisciplinary problem, and an all-hands-on-deck moment. This session will address key aspects of the physical science of climate change, bring home its massive scale, and delve into the social science that provides different sorts of challenges to teaching and learning climate change than is presented by teaching, for example, photosynthesis.

### **Biography**

Don Haas (formerly, Don Duggan-Haas) is the Director of Teacher Programming at The Paleontological Research Institution and its Museum of the Earth & Cayuga Nature Center in Ithaca, NY. Don’s work in public outreach, teacher education, teacher professional development and curriculum materials development marries deep understandings of how people learn with deep understandings of the Earth system. He is a past president of the National Association of Geoscience Teachers, and a nationally regarded expert in climate and energy education, place-based and technology-rich Earth and environmental science education. He has led educator professional development programming throughout the US. He also is co-author of the books, *The Teacher-Friendly Guide to Climate Change* and *The Science Beneath the Surface: A Very Short Guide to the Marcellus Shale*. He served on the Earth & Space Science Design Team for the National Research Council’s **A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas**. Don has taught at Colgate, Cornell, and Michigan State Universities, the University at Buffalo, Kalamazoo College, and Tapestry and Norwich (New York) High Schools.

**Virginia Association of Science Teachers**  
**2021 Virtual Professional Development Institute**  
**General Session II**  
**Wednesday November 17, 6:00 pm – 6:45 pm**  
**“Spinning Stories: The Science of Archaeology and Complex Problem Solving”**



**Dr. Carole Nash**  
**Director - Environmental Archaeology Laboratory**  
**Associate Professor, School of Integrated Sciences, James Madison University**

Teaching complex problems requires us to integrate evidence from multiple disciplines. Inherently interdisciplinary in practice, archaeology models collaboration between the sciences to explain past events and demonstrate their relevance to contemporary issues. With its long-term perspective, archaeology also provides a systems basis for understanding human responses to social, environmental and technological change. Nevertheless, the real power of archaeology for teaching and learning lies in its storytelling -- the narratives that allow students to see themselves in both the process of the work and the result. We will explore examples of archaeological studies, ranging from the end of the Ice Age to the 20th century, from across Virginia.

**Biography:**

With over 40 years of experience in the archaeology of the Middle Atlantic region and Dr. Carole Nash, RPA, a specialist in the archaeology and historical ecology of the Appalachians. Her main research interests are the long-term environmental and cultural history of upland Native American cultures. She teaches courses in field technologies, historical ecology, environmental science, and human geography. She is the author of over 175 technical reports, scholarly papers, and publications, including co-author of *Foundations of Archaeology in the Middle Atlantic* (Routledge 2018). She has directed archaeological research in Shenandoah National Park (SNP) since 1999 and Wintergreen since 2003 and has employed over 100 undergraduate students in this work, resulting in student conference presentations, publications, and co-authorship on technical reports. She completed four years as the President of the Archeological Society of Virginia and has served as President of the Middle Atlantic Archaeological Conference and the Council of Virginia Archaeologists. She is a founding member of the Virginia Archaeology Charitable Trust and is involved in several projects that merge archaeological evidence with historical cartography and remote sensing to understand the impacts of sea level rise on heritage resources and contemporary communities. She is chair of the Society for American Archaeology's international committee on Climate Change Strategies and Archaeological Resources Committee. A practitioner of citizen science, Carole co-directs the Archaeological Technician Certification program for the Archeological Society of Virginia and the Department of Historic Resources.



**Virginia Association of Science Teachers  
2021 Virtual Professional Development Institute  
General Session III  
Thursday November 18, 6:00 pm – 6:45 pm**

**“Systems for Success in the Elementary Science Classroom”**



**Dr. Joi Merritt  
Associate Professor of Science Education  
James Madison University**

At the elementary level, teachers are often responsible for teaching all subject areas. The narrowing of the elementary curriculum has resulted in limited time on science, which is an equity issue, as research shows students in our most marginalized schools have even fewer opportunities to engage in meaningful and powerful science learning than their counterparts in privileged schools. This talk will discuss solutions for providing access, engagement and success for elementary students in science.

**Biography:**

Dr. Joi DeShawn Merritt received her BS in Engineering (Chemical Engineering) from the University of Michigan, Ann Arbor. Prior to returning to the University of Michigan and receiving her Ph.D. in Educational Studies (Science Education), Dr. Merritt was a high school chemistry and physics teacher in Charlotte, NC. Her research focuses on: (a) designing science and engineering curriculum materials and assessments to investigate K-16 student learning over time, and (b) preparing elementary teacher candidates to teach science equitably in the inclusive, culturally and linguistically diverse classroom. Dr. Merritt teaches courses on elementary science methods, curriculum planning, inquiry and critical thinking.



710 SOUTH MAIN STREET, HARRISONBURG, VIRGINIA 22801 | 833-564-0200

REGISTER NOW  
2021 ANNUAL  
PROFESSIONAL DEVELOPMENT INSTITUTE

**NOVEMBER 18-21, 2021**

\$107.81 PER NIGHT (INCLUSIVE OF OCCUPANCY AND STATE TAX)  
BLOCK NAME VAST



- To make a reservations [click here](#)
- Online PDI registration [click here](#)

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540-564-0300 **FAX**

[hotelmadison.com](http://hotelmadison.com)



# The VAST Science-VERSE is Expanding!!!!

Michael Pratte, Past President



Greetings fellow science educators, your VAST Content chairs and association are working intentionally to bring you organized access to high quality professional learning materials organized by grade, content, and course. Our Fall 2020 virtual PDI offered an incredible opportunity to amass science teacher excellence to support VAST members throughout the year and prepare them for next Fall's PDI 2021.

When The VERSE (VAST ENRICHMENT REPOSITORY for SCIENCE EDUCATORS) debuts in late this summer, VAST members can access it in its own section from the main web page. The VERSE will also offer links to content like strands found in VAST publications including: the Journal of Virginia Science Education, The Science Educator, and VAST position papers. Please consider contributing your expertise in the future to any or all member resources.

## Screenshot of the 2020 PDI Presentation Page

VAST members login to website and go to: [www.vast.org/2020pdipresentations/](http://www.vast.org/2020pdipresentations/)

Home Teachers Annual PDI Publications About Join us

Home > Annual PDI > 2020 PDI Presentations

Like 0 Share Tweet Share

From this page VAST members can access all MP4 and pdfs provided by the PDI presenters from the general (prerecorded), live (via Zoom recording), and prerecorded sessions (provided by presenter) by way of a Google Drive. Zoom recordings also produce a m4a audio file and chat transcription. Questions or comments about an individual presentation? Contact the presenter. For a technical issue with a link or viewing a file, contact: [pdi.presentations@vast.org](mailto:pdi.presentations@vast.org)

**Folders from General Sessions**

Special Session	General Session I	General Session II	General Session III
Em Stephens	Dr. Zipporah Miller	Dr. Ken Miller	Dr. Cindy Moss

**Folders for VAST Business Sessions**

Welcome	Treasurer's Report	Awards Ceremony	Election Results	Call for the 2021 PDI
Michael Pratt, President	Matt Scott, Treasurer	Sandy Pace, Awards Chair	Tom Fitzpatrick, Immediate Past-president	Russ Kohrs, President-elect

**Quick Links to Folders from Live Sessions** (click [here](#) for pdf including presenters and abstracts).

Session	Room A	Room B	Room C	Room D	Room E
1.	<b>Collaboration for Impact: Modeling an Integrated Partnership</b> ALL GRADES General, Educational Partnership	<b>Student Goals: The Classroom Compass</b> ALL GRADES General	<b>An App for Identifying a Fossil and Determining its Age</b> HS-COL Earth/Space Science	<b>Remote Learning - Keep Students Engaged</b> MS-HS Biology/Life Science	<b>Using Gifted Strategies in the Classroom</b> ALL GRADES General





## **Donta the Dragonfly Explores the Dominion Spring 2021**

**Cindy Duncan with** Christen Miller,  
**Teacher Professional Learning Coordinator**  
**Chesapeake Bay Foundation**

Donta has immersed from all the online virtual exploring during the fall and winter and is ready to explore the Dominion once again. She just adores spring in Virginia. Everywhere she goes she finds nature waking up after a long winters nap. Sounds of spring peepers, and birds singing a serenade are abound in the beautiful Dominion. Donta decided it was a perfect time to visit some Virginia State Parks to see what was blooming and growing and which animals were hatching or migrating back from their winter homes. For her first exploration she flew to Virginia's Eastern Shore and visited Kiptopeke State Park. She watched the birds as they migrated back north and noticed that they stopped and enjoyed the abundant food and shelter available in the fields and forest there.

She then flew over to First Landing State Park and soared through the Cypress Swamps, enjoying the new spring growth on the trees, and resting for a while on a Bald Cypress knee while she watched the shifting rainbow on the surface of the water.

Her adventure then went a little farther inland to York River State Park, and she followed the winding path of Taskinas Creek. She watched the tide go in and out, and the snails crawl up and down the marsh grasses. There were butterflies and bees on the first spring blooms, and she knew that many of her dragonfly friends would be out soon, too.

Virginia State parks are not only enjoyed by Donta for the nature, history and culture, humans also visit

*Rainbow Swamp  
at First Landing  
State Park*







*Paddlers  
Exploring  
Taskinas Creek at  
York River State  
Park*

the 40 state parks open to the public for a variety of recreational and educational activities regularly. Donta discovered that there is a state park within a hour drive from every Virginian!!!

Most parks offer field investigations and outreach and virtual programming for pre-K through 12 students and educators. The park service also has a mobile education program called the Bay Experience Unit that works within the Chesapeake Bay Watershed area. Parks are also wonderful spaces to unwind and let the stress of the work week float away with hiking, biking, paddling, camping, and cabin stays.

To learn about Virginia State Parks visit <https://www.dcr.virginia.gov/state-parks/>. You can also find them on FaceBook, Instagram, and Twitter. To learn more about the Bay Experience Unit contact [sammy.zambon@dcr.virginia.gov](mailto:sammy.zambon@dcr.virginia.gov).

Article written in collaboration with Christen Miller, the Visitor Experience Director of Virginia State Parks.



## TEACHER Appreciation Week

Enter to win a \$250 gift card →

**Wave goodbye to your app fee**

Apply by May 12 for the May 24 term and we'll credit your application fee toward your tuition.

## **2021 Virginia Association of Science Teachers (VAST) Vice-President's challenge to Virginia teachers of science to: "set and/or add to, your goals now!"**



Congratulations! You've already taken the first step: by either renewing your prior VAST membership for another year or by recently becoming a new VAST member. Below, you will find a list of ways that you can use to challenge yourself, to make this school year and upcoming years of teaching science, even better than before: for yourself, your students and colleagues. Also, don't forget to seek information from the various formal and informal science institutions, and or other science organizations throughout Virginia. Challenge yourself to accomplish at least 2 things from the list below, before this school year ends!

1. Show enthusiasm about the Virginia Department of Education (VDOE) science curriculum/content that you currently teach to students (all grade levels) and demonstrate enthusiasm for "doing" and "learning" science.
2. Encourage everyone you know that teaches science at all levels (elementary, middle, high, college/university, and/or informal science related organizations) in your school district's VDOE/VAST region, to become VAST members.
3. Encourage yourself, and other science teachers (at all levels), to write and submit articles for the VAST newsletter: (The Science Educator), which is usually published five times a year.
4. Encourage yourself and other teachers (of science) to write and submit formal science articles for the VAST journal: the Journal of Virginia Science Education; which is published at least once a year.
5. Attend and plan to be a presenter at both your VAST regional Professional Development Institute (PDI) and at the VAST statewide PDI. Don't forget to register for both of these PDI's, whether they are held in person, or virtually.
6. Volunteer to be a member of at least one VAST committee (most of these meetings will be held virtually).
7. Write and submit applications for various VAST and/or other science organizations' awards, grants, and honors.
8. Encourage yourself (and fellow teachers of science) to apply for various local, state and national science grants. This is a great way to acquire funding for needed resources, to be used for hands-on labs/activities/ projects for students during regular class sessions and also can be used for participation in before-school and/or after-school science clubs. Teachers can work together to sponsor science clubs that may or/ may not, have multiple grade level members.
9. Sponsor one-or-more science-related clubs for students, such as: 4-H, FFA, Wildlife ID, Young Astronauts, etc.
10. Encourage your students in grades 7-12 to: conduct original science research, write about their research experiences, and submit their papers for the annual Virginia Junior Academy of Science (VJAS) statewide competition.
11. Encourage your 5th-8th grade female students, with a strong connection/involvement in science, to apply & compete for the annual National Science Teachers Association (NSTA) Angela Award. Consider becoming a NSTA member.
12. Apply for science awards at the local, state, national, and/or global levels: these may include but aren't limited to: the NSTA Distinguished Teaching Award, the NSTA: SeaWorld/Busch Gardens Environmental Excellence Award, the Presidential Award for Excellence in Mathematics and Science Teaching (PAEMST) and the President's Council for Environmental Quality (National Environmental Education and Training Foundation (NEETF) –Teacher) Award.
13. Train/certify as a NASA affiliated GLOBE (Global Learning and Observations to Benefit Earth) teacher (this can be done online); then have your students (K-13th and all other higher-level-education students) collect & report scientific data for one/ or more of the 4 GLOBE protocols: Atmosphere, Biosphere, Hydrosphere, and Pedosphere (soil). This worldwide monitoring program, is a great opportunity for you and your students to become "global scientists".
14. Train to become a state facilitator with one, or more, of the national environmental K-12 programs in Virginia, such as: Project Learning Tree, Project WILD, Project Wet, Project Aquatic WILD, etc. Also, these state coordinators may be able to help provide a facilitator for teacher training at your school, or in your school district. These state coordinators may also be available to present one or more sessions at your regional VAST PDI's.
15. Email your VAST Regional Director about ways to share resources. Be brave and proactive, set science goals for the rest of this school year and also be ready to get off to a great start at the beginning of the 2021-2022 school year. Remember: "the experience(s) of applying for science awards and honors at local, state, and national levels, will also help prepare you for competing and earning certification as a National Board Certified Teacher (NBCT)". I can be contacted at: shirleysyp@aol.com if you have any questions about any of the above items.



# Virginia Association of Science Teachers Board of Directors Nomination Form

*Only members in good standing may apply.*

Name of Nominee \_\_\_\_\_ VAST Membership Number \_\_\_\_\_

Nomination for the Office of

☐ President-Elect

☐ Vice-President

Nomination for Regional Director (Two-year Term: Regions II, IV, VI and VIII elected in even years. Regions I, III, V, and VII elected in odd years)

☐ Region I ☐ Region III ☐ Region V ☐ Region VII

Nominator (self-nominations are permitted and encouraged) \_\_\_\_\_

Nominator's Email: \_\_\_\_\_

**The information below is for the Nominee to complete.**

School/Institution \_\_\_\_\_

Position/Title \_\_\_\_\_

School/Institution Address \_\_\_\_\_

School/Institution Telephone Number (\_\_\_\_) \_\_\_\_\_ NA \_\_\_\_\_

School/Institution E-Mail \_\_\_\_\_

Home Address \_\_\_\_\_

Home/Cell Phone \_\_\_\_\_ Home E-Mail \_\_\_\_\_

Years as a Science Educator \_\_\_\_\_ Years as a VAST Member \_\_\_\_\_

Provide the names & e-mails of two individuals that have agreed to support your nomination:

(1) \_\_\_\_\_ E-mail \_\_\_\_\_

(2) \_\_\_\_\_ E-mail \_\_\_\_\_

Please attach a statement of 150-200 words detailing your experiences to include the bullets below.

- Leadership in VAST or other science organizations;
- Membership in other science-related organizations;
- Any additional activities, honors, and awards;
- Any science or educational publications you may have authored; and,
- The position(s) in VAST for which you would like to be considered.

By signing this form, I attest that I am a member in good standing of the Virginia Association of Science Teachers and am willing to have my name submitted as a Nominee for the office of \_\_\_\_\_ to the Nominations Committee.

SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_

**Submit this Nomination Form and your paragraph by email to [past.president@vast.org](mailto:past.president@vast.org) by May 15, 2021.**



## 2021 Donna Sterling Institute

### The Path Forward: Finding Smart Solutions in Energy and Climate Science Using Problem-based Learning

**Synchronous sessions: October 9 and 16 (3 hours each)**

**Asynchronous instruction: Oct 3-8 and 10-15 (~2 hours each)**

**Register May 1 to October 1 Online**

**<https://vast.wildapricot.org/Registration-Information>**

We are pleased to announce the 2021 Donna Sterling Institute. It will be virtual this year. Donna Sterling was instrumental in her vision of problem-based learning (PBL) as a means of teaching and integrating science with math, engineering, technology, and language arts. She was committed to meeting the diverse needs of our students through culturally responsive practices. PBL prepares students for academic, personal, and career success by helping them make important connections. It also supports young people to meet the challenges of the world they will inherit.

The Sterling Institute supports teachers in developing and enacting PBL units in their instruction through a 10-hour professional development offered in a series of face-to-face and virtual sessions. Here is your chance to learn how to implement this powerful teaching strategy!

#### **Participants will**

- Use a PBL approach to learn about climate and energy
- Engage in National Energy Education Development (NEED) activities to support understanding climate and alternative energy
- Learn the key components of a PBL unit
- Consider ways to modify what you learn to meet the Standards you teach and the needs of your students
- Develop plans for their own PBL

#### **Sterling Institute Schedule**

##### **Asynchronous Oct 3-8 (2 hours)**

Introduction to Sterling Institute and PBL  
Introduction to the Scenario, Overarching Question, Culminating Activity  
Climate Science (Don Haas)

##### **Synchronous October 9 (9-12)**

Introduction to question mapping  
“Hands on” inquiry activity  
Introduce PBL planning template

##### **Asynchronous Oct 10-15 (2 hours)**

PBL Planning: Each participant develops a unit plan, question map, and culminating activity

##### **Synchronous October 16 (9-12)**

Small breakout groups (4-6 people) by content area/grade level with a Sterling facilitator.

**Asynchronous Wrap Up by November 20**







## 2021 Donna Sterling Institute

### Finding Smart Solutions in Energy and Climate Science

K-12 students need a fundamental understanding of energy to develop a thorough, comprehensive understanding of climate science and the path forward to climate and energy resiliency. However, decisions about climate and energy policy are seldom made from a foundation of science.

The 2021 Sterling Institute in collaboration with NEED Energy will engage participants in a PBL unit using a topic of climate and alternative energy, which is adaptable for elementary through high school students. Participants will learn about climate and alternative energy from nationally known climate educator Dr. Don Haas in a virtual presentation and engage in NEED lead activities to help understanding of climate and alternative energy.

Teachers learn the key components of a PBL unit including designing an authentic scenario and essential question, question map development, and creating culminating activities. Teachers will develop plans on how to modify what they learn to meet the Standards they teach and the needs of diverse students in their own classroom context and will begin planning their own PBL.

#### **Donna Sterling Institute Registration Fee: \$30**

(Institute registration fee does not include registration for the VAST PDI)

**Register May 1 to October 1 Online**

**<https://vast.wildapricot.org/Registration-Information>**

**Instructors:** Jaclyn Claytor, Robin Curtis, Dr. Elizabeth Edmondson, Dr. Don Haas, Emily Hawbaker, Suzanne Kirk, Dr. Jennifer Maeng, Dr. Anne Mannarino, Dr. Juanita Jo Matkins, Dr. Jackie McDonnough, LoriAnn Pawlik.



## Elementary Teachers (K-6): Apply for the 2021 Donna Sterling Exemplary Science Teaching Award



Donna Sterling

Donna Sterling was a visionary science educator with a passion for working with science teachers and developing habits of inquiry-based teaching. Most recently, her leadership in the Virginia Initiative for Science Teaching and Achievement (VISTA) focused on elementary and secondary teacher professional development. This award recognizes that exemplary teachers engage in continuous improvement, and is designed to support a professional development plan for the improvement of science teaching. In 2021, the award will be given to an exemplary elementary teacher. **For the elementary award the 6th grade teacher must be teaching in an elementary setting. The award alternates between elementary and middle/secondary.**

The awardee will receive a total of **\$4000**. In addition, travel costs will be reimbursed to attend the 2021 VAST PDI to receive the award and to the 2022 VAST PDI to present a session on the professional development experience and outcomes. The awardee will receive \$3000 at the VAST PDI in 2021. The remainder will be awarded after the awardee presents at the next VAST PDI and also submits an article to either the newsletter *The Science Educator* or the *Journal of Virginia Science Education*.

**Deadline for applications: July 15, 2021**

### To apply:

1. In your cover letter, include information on yourself, including your preferred name, your home and school addresses, and phone numbers and email address(es) where you can be reached. Tell us how many years you have taught, where, and what grade levels.

2. In no more than two pages, single-spaced, describe

an inquiry-based science unit that you taught. Describe how your unit is student-centered and includes community engagement. Give evidence that the unit was effective. Evidence documents such as student work can be submitted separately, and will not count toward the two-page limit.

3. In no more than two pages, single-spaced, describe your plan for professional development, using the funds received through the Sterling award. These plans may include summer courses, attendance at workshops, study abroad opportunities, instructional materials development under the guidance of experts on-site, etc. Feel free to be creative in your plan. Submit the professional development description with anticipated outcomes, including plans for a presentation at the 2021 VAST PDI. Tell how this award will help you become a better teacher of science and will support the development of leadership skills. Tell about your plans for writing an article about your experiences.

4. Submit three letters of recommendation based on direct observations of teaching. One letter must be from the science supervisor or someone serving in that capacity, a second letter must be from the principal, assistant principal, or instructional leader, and a third letter must be from a fellow teacher or a parent. Letters should address the following:

- Why is this teacher a good candidate for this award?
- What qualities do they exhibit as teachers that make the recommender think they will use the funds from the award to improve their practice as teachers of science?

**All materials must be submitted by 5 pm on July 15, 2021.**

Submit applications and letters of recommendation to Dr. Juanita Jo Matkins, [jjmatk@wm.edu](mailto:jjmatk@wm.edu).

# 2020 Donna Sterling Winner Plans a Field Project to Study Ancestral Puebloans

## Russ Kohrs

The archaeological story of the Ancestral Puebloans contains a wealth of environmental science lessons for students today. This culture flourished for hundreds of years atop the semi-arid Colorado Plateau region. Their culture was sometimes unified and at times more fractured. Puebloans daily navigated a vibrant life in a marginal environment utilizing natural resources in the area, managing scarce water, and relying entirely on human labor (no pack animals). During the peak of the region's occupation, between 800 and 1300 CE, vast cultural networks developed as well as vast trade networks with cultures far afield, including Mesoamerica. Just prior to 1300 CE, major abandonment of settlements took place. Migration was long thought to be related entirely to drought, but modern interpretations of the archaeological record highlight a more complex array of challenges that led to the diaspora. These include drought, but also environmental over usage, the possibility of new religious ideas disrupting the culture, or even invaders from outside. For my 2020 Donna Sterling Award project, I plan on documenting the current view of these events in a series of virtual field experiences. The guiding essential question for my work will be how the people of this region interacted with their environment in a systematic manner. When viewed as a system, what is the story of the dynamic equilibrium between the Ancestral Puebloan people and their environment as viewed through the archaeological and geological records?

For three weeks in May and June, I will travel around the “four corners” region in an effort to visually explore this question. Already, I have spent a great deal of time reading the current literature on the subject. This preparation has created several areas of focus for me. These include the exploration of moisture fluctuations through cave and tree ring records, exploring the creation of irrigation measures near “Great House” sites, the use of light and shade for shelter design, and also questions with a more cultural focus - how over time cultural practices affected their usage of resources at habitation sites. These are complex topics, none of which have definitive answers. Still, we know enough to be able to paint a canvas that students today can relate to, as they see their own environments changing around them and consider how their cultural patterns affect their own relationship to that environment.

The expedition will begin at Chaco Canyon where, for

about 500 years, the Ancestral Puebloan culture flourished and spread. From there, I will be visiting a large number of “Chacoan Outlier” sites. These are sites that resemble the Great House planning indicative of Chacoan dwellings. Such characteristics include a large number of rooms (hundreds, in many cases), astronomical alignments, multiple floors, multiple kiva structures, etc. Outlier locations to visit include Chimney Rock, CO, Hovenweep NM, Edge of the Cedars SP, Utah, several sites in Canyon of the Ancients, Aztec NP, and others. The expedition will also explore cliff-dwelling sites, focused on some in southeastern Utah, but particularly those available to be seen only via a private tour through Ute Mountain Tribal Park.

To create the virtual field experiences, a variety of technologies will be used. These include 360 imagery and video, drone footage (where possible), and Gigapan images. Archaeological ruins, petroglyph panels, and wherever possible other archaeological features including irrigation features and ancient roads will be included. Planning has included a great deal of logistical explorations, but also has explored the need to seek permissions wherever possible or necessary for the work. Due to COVID realities, there are some limitations expected in terms of site availability, and primitive camping will be the primary sleeping arrangement. Once created, the VFE material will include audio guides and other useful connections to content so that teachers can use them beyond my own classroom. I will be sharing the results. Stay tuned!

If you're excited for this expedition, I encourage you to plan your own! Every year, VAST offers the Donna Sterling Exemplary Science Teaching Award to an applicant who puts together an exciting and well-thought-out professional development plan. It certainly doesn't need to include a massive expedition, but it can. This year, the award will go to an elementary teacher and, in 2022, will migrate back to middle and secondary teachers.

But, apply and dream big! This expedition exploring southwestern archaeology and geology would not be possible without the funding provided by this award. Consider how you, too, can also pursue a dream project for your classroom.

**Russ Kohrs, VAST President 2021**

## Virginia STEM

# What is Virginia STEM?

Chuck English, Virginia STEM Coordinator



In the past 10-15 years, “STEM” has emerged as a universally recognized acronym in the education community to represent the subjects of science, technology, engineering, and mathematics. The use of “STEM” has evolved into a strong, nationwide, motivating initiative to strengthen those critical fields of education that have a strategic impact on our future. STEM has been adopted, not just as an acronym but as a concept of integrating instruction effectively in the four key fields. These critical fields form a foundation for many disciplines and career paths, but more importantly, the foundation of a strong economy.

The Virginia STEM Coordinator, Chuck English, works out of the Science Museum of Virginia. Over the past couple of years, he has collaborated with other stakeholders to advance STEM in Virginia. In 2018 a [STEM Commission](#) was created and culminated in STEM Education Commission’s Final Report, submitted in September 2020. The latest General Session unanimously passed STEM legislation ([HB2058](#)) to create a more permanent STEM Advisory Board. This legislation was the [Final Report’s](#) primary recommendation, creating a focal point for State STEM and creating a more unified vision and STEM goals. This new Advisory Board officially starts July 1.

## What are the next steps?

We are currently seeking qualified individuals to apply for the Board. The Virginia STEM Education Advisory Board will include ten slots for non-legislative citizen members. The Governor will appoint these citizen members. The applicants must have STEM experience with the public and private sector, industry partners, environmental organizations, and/or formal or informal STEM educational organizations.

If you are interested in applying to be part of the Virginia STEM Education Advisory Board, please apply at <https://solutions.virginia.gov/BoardAppointments>. The link will be under Education.

Most of the work of the STEM Education Advisory Board will start **after July 1**. The work done beforehand includes research into other State STEM models and creating a communication network between the myriad of STEM Stakeholders across the Commonwealth. Virginia STEM works with national STEM communities and other states such as Iowa, Oregon, and Pennsylvania, who all have similar Coordinator roles.

**Chuck English**  
**Virginia STEM Coordinator, Science Museum of Virginia**  
**804.864.1430**



## Write for ***The Science Educator*** **WANTED: You are Invited to Submit!**

Do you have lesson ideas or resources to share with other colleagues? We would like you to submit them for the newsletter. Think about the useful and interesting ideas you have discovered that other teachers would like to know about. Write about what you know best. Were your students excited about a lesson or activity that you used this year? Did you find a better way to explain or communicate a concept?

### What should you do first?

- Decide your topic
- Write - Edit - Write - Repeat
- Send articles to the VAST Editor before the submission date.
- Using any suggestions and edits, finalize your article.

The next submission date is always on the last page of every newsletter. All the submission dates and more information are listed on the [publication -> newsletter page](#) on VAST.org.

**Do you have questions?** Please contact the editor, [Jean Foss](#).

## Data Classroom



### The days of boring statistics are numbered... literally

DataClassroom runs on any computer or tablet with a web browser and an internet connection. Students can work with real-world datasets in the library or upload and save their own. The interface is designed for students in grades 6-12 and grows with students as they move from simple graphing activities all the way to statistics.

Visit [DataClassroom.com](http://DataClassroom.com) to learn more

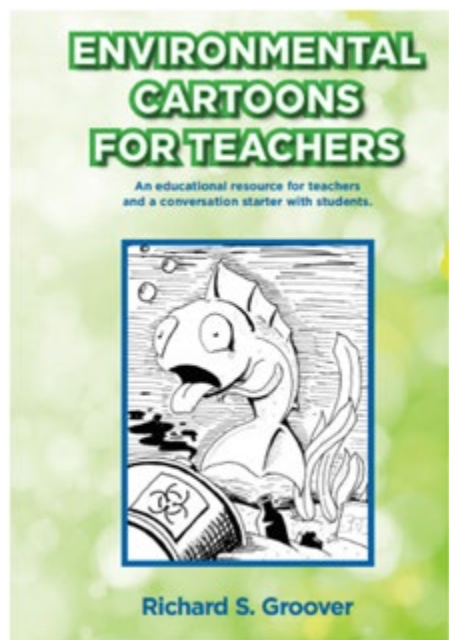
## Write for the Journal !

We know you've learned a lot over the past year! JVSE invites pre-service and in-service teachers, school administrators, science education faculty, and informal science educators to submit papers for the Winter 2021 issue of JVSE. The theme is *Integrating the Virginia Computer Science Standards into K-12 Science Instruction* and we'd love for you to share lesson activities, solutions, and research associated with all you've learned over the past year! Submissions due July 31, 2021 and the winter issue will be published December 15, 2021. Submissions unrelated to the theme are also welcome!!! If you have questions, please reach out to Amanda Gonczi and Jenn Maeng, journal co-editors at [journal@vast.org](mailto:journal@vast.org).



# Environmental Cartoons For Teachers by Dr. Richard S. Groover

*Reviewed by Dr. Anne Mannarino*



“The Environmental Cartoons for Teachers is a useful educational resource for teachers, at any level of education to get the conversations started. With over 40 mostly student drawn cartoons, teachers can copy for educational and public purposes to assist with teaching environmental and biological topics to students. For example, across the page from each image is a short statement that relates to the cartoon. One cartoon mentions that insects and pollinators provide a service for three-quarters of all our food crops, a value of \$500 billion dollars per year. Another cartoon mentions the “Wood Wide Web” and how trees “talk” to each other.”

Richard S. Groover

*Dr. Anne Mannorino, VAST, reviews the book. This book uses the power of over 40 visual cartoons to address environmental issues today. The focus is on climate change. As you read the book, you are first shown a cartoon in black and white with specific captions. Then the environmental issue is explained in a short paragraph. The book could be used as a starting point or ending point to discuss environmental issues. Not a lot of detail is given for each environmental issue, but it provokes the reader into wanting to learn more. There are also facts and figures referred to throughout the book. The websites are listed with the page numbers at the end of the book. If you teach any form of environmental sciences, then this book could be the stimulus needed to start much needed important conversations.*

For more information contact Dr. Richard Grover:

[rgroover@reynolds.edu](mailto:rgroover@reynolds.edu) or [rgroover33@gmail.com](mailto:rgroover33@gmail.com)

**Thank you for supporting VAST in 2020,  
but please consider making a ...  
Positive Impact in 2021**

During these pandemic times, we have seen our Commonwealth come together to help. Finally, 2020 came to an end, where we find ourselves thankful, but we still have catching up to do. Please consider a financial donation to VAST a 501c3 non-profit to help continue to foster science education in Virginia.

We hope you will consider supporting VAST right now by:

1. mail a check to the VAST Treasurer,
2. transfer appreciated securities/stock,
3. make a Qualified Charitable Distribution from your IRA.
4. arrange for planned giving (bequests, life insurance, trusts), or
5. donate online at [www.vast.org](http://www.vast.org).

**Donate**

*On behalf of everyone at VAST, we thank you in advance for your investment in our 2021 programs.*



# Digital Demos

from the **Science Museum of Virginia**

Groups can explore the world with a live, virtual Digital Demo!  
From dissections to engineering challenges, there is  
something for curious minds of all ages!

Visit **[smv.org/groups](http://smv.org/groups)** to learn more.

Special thanks to our  
premier partner:



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#### Is Your Address Changing?

Be sure to let VAST know your new contact information. Neither the post office nor the internet will forward our newsletters. Please log in to VAST.org to edit your account or e-mail Barbara Adcock, Membership chair: [Membership@vast.org](mailto:Membership@vast.org).

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### Mission of the Virginia Association of Science Teachers (VAST)



- *inspire students,*
- *provide professional learning opportunities,*
- *build partnerships,*
- *advocate for excellence at the school, local, state and national level.*

**Please send articles,  
letters to the editor, or labs by the submission deadline, July 1, 2021,  
for inclusion in the next Newsletter.**

**Please consult the website for up-to-date information, VAST forms for awards and mini-grants,  
advertising and current PDI information: [vast.org](http://vast.org)**



The Virginia Association of Science Teachers (VAST) is incorporated in Virginia as a charitable, scientific, and educational organization. VAST is an IRS 501 (c) 3 qualified organization, and is registered with the Virginia Department of Consumer Affairs.