



VAST's Vision:
Excellence in Science Education
Through Innovation

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Check the web for news, conference updates, registration, and forms.

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VAST PDI Expedition **“A Passport to Travel”** **Exhibitor Reception** **Sponsored by Virginia Department of Aviation**



Thursday, November 10, 7:30 pm -9:00 pm



Come celebrate with us for networking, food and adventure to explore. Grab a passport and get on board with the Virginia Department of Aviation to begin your expedition. There will be both food and adventures.



Friday, November 11, 8:30 pm -10:00 pm

You will continue your travels on Friday night with WorldStrides and your VAST Regional Director by exploring eight amazing locations and interactive activities. Dancing, DJ, food, limited drink tickets and some great door prizes.





As a VAST member you are a part of the VAST Community

Susan Booth, Ed.S., Executive Director
Fellow, Virginia Academy of Science

The VAST Community:

We look at the VAST Community as a 365 Day Community continues for a lifetime. We moved from virtual to hybrid to back in person for Williamsburg 2022 with field trips and other exciting venues and speakers.

Our publications (newsletter and journal) never went away, as well as our website continued to be in real time with Facebook and other social media platforms (twitter). You can now go to coffee talks and repurpose content (VERSE) Our engagement with you has extended past 365 days.

Benefits for being part of the VAST community stretch from our consistent messaging as seen in our white papers. We continue to have representation on our board as well as serving on other boards to provide public forums, sharing best practices, and finding others with similar interests.

It's not just education, but engaging with peers, corporations (exhibitors) while working to better build internal stakeholders. We provide best practices with updates to share successes for each other (PAEMST). Through the year with our culminating activity -PDI- we aim to achieve our goals.

We continue to provide year-round education and engagement as a membership benefit to our organization as we positively change. Sustainability is no longer an idea but is a part of our platform. We recognize you as an integral part of our professional pathway. We honor your commitment to help accelerate all we do with connecting participants, partners, and practices to be meaningful and enriching.

Thanks for being part of our VAST Community.

Susan Booth,
VAST Executive Director

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May Message



Hello Expedition Team,

Welcome to May, a month known for displaying seasonal change, growing excitement for the new growth, literal and metaphorical, in the world around us. As an elementary science educator, May is prime time for me to utilize the outdoors as a natural meaning space filled with authentic opportunities to practice scientific skills with my young explorers. May also marks that in six month's time, we will all have the opportunity to gather together, in person for this year's Professional Development Institute in Williamsburg, VA. This is a fact that is certainly exciting, especially thinking about the concurrent sessions that many of you (hopefully all of you!) will be leading, the field experiences we will be able to enjoy together, and of course the exhibitors, sponsors, and Keynote Speakers that will be highlights of our time together as well. This reminds me, have you submitted a proposal or two for our concurrent sessions? Have you registered for the PDI and secured your spot on a field experience? Have you registered for the PreConference Donna Sterling Institute? Have you reserved your exclusive room in the hotel? If you answered "no" to any of those questions, think about adding this to the top (or close to the top) of your "to do" list. You do not want to miss this year's sessions, special events, field experiences, or Keynote Speakers. Did you know we will have an AIRCRAFT on display this year? Did you know that you could have this aircraft visit your educational facility? Enough spoilers though, you really need to register for this year's events and prepare for a PDI like no other!

On a different note, I want to check in with you. How are you doing? Really, how are you doing? This year has been another in the history books, under the section titled "Difficult". I encourage you to check in with yourself, your colleagues, your family and friends and really think about how you are doing. Make intentional choices about taking care of yourself first, and if you are able, those around you second. Education has always been a team sport, one that requires collaboration, positive connections, and more often than not, your whole self. If you are not whole, you cannot give your whole self or even a fraction of it. So, my expedition team, how are you? What intentional choices can you make this month to ensure that you are okay?

Your Expedition Leader,

Becky Schnekser,
VAST President 2022

VAST SCHEDULE AT A GLANCE - 2022

(draft as of May 5)



Wednesday November 9, 2022

7:00 PM – 8:30 PM VAST Board of Directors Meeting

Thursday November 10, 2022

Ticketed Donna Sterling Institute (separate registration from the PDI)

Title: ***Using Problem-Based Learning in Finding Smart Solutions in Energy and Climate Science***

7:30 AM Continental Breakfast and Check in

8:00 AM – 3:00 PM Sterling Institute Presentations and Lunch

2:30 PM – 6:00 PM VAST PDI Registration Desk Open

3:15 PM – 5:00 PM **Pre-Conference Ticketed Workshops**

Elementary:

Speakers: Angie Meredith and Pam Caffery

Title: ***Building Science and Math Lesson Integration with STEM Challenges***

Sponsor: Hand2Mind

Middle School:

Speakers: Sharon Bowers, Joan Harper-Neely, Betsy McAllister

Title: ***Balloon Aerodynamics Challenge***

Sponsors: NASA eClips Education Team, National Institute of Aerospace Center for Integrative STEM Education

High School:

Speakers: Chris Carter, Scott Bellows, Julie Young

Title: ***Introduction to Small Unmanned Aircraft Systems (sUAS or Drones)***

Sponsor: Virginia Space Grant Consortium

3:15 PM – 5:30 PM **Pre-Conference Ticketed Fieldtrips**

FT #1: ***William and Mary Field Experience***

FT #2: ***Conservation Laboratory at the Colonial Williamsburg Art Museum***

6:00 PM – 7:15 PM **Welcome to the PDI, General Session I**

Speaker: **Dr. Jeanette Davis** AKA Dr. Ocean

Title: ***Science is Everywhere, Science is for Everyone: The Art of Storytelling***

Sponsored by Hand2Mind (door prize giveaway)

7:30 PM – 9:00 PM **Night with the Exhibitors** (cash bar)

Friday November 11, 2022

7:15 AM – 5:00 PM Registration Desk Open

7:30 AM Continental Breakfast in the Exhibit Hall

7:30 AM – 10:30 AM Exhibit Hall Open

8:00 AM – Noon Ticketed Field Trip #3: ***Archaeology and Education at Fairfield Plantation***

8:30 AM – 9:20 AM Concurrent Session 1 Breakout Presentations

9:35 AM – 10:25 AM Concurrent Session 2 Breakout Presentations

10:40 AM - Noon **General Session II and Business Meeting**

Speaker: **Dr. Raquel Fleskes**, Genetic Anthropologist, University of Connecticut

Title: ***The Science of Making Science Accessible: DNA and Community Building***

(door prize giveaway)

Continued next page.

Friday November 11, 2022 - continued

Noon – 1:00 PM	Ticketed Buffet Lunch
12:30 PM – 6:00 PM	Exhibit Hall Open
1:00 PM – 5:00 PM	Ticketed Field Trip #4: York River State Park Exploration of Wetlands and Global Climate Change Indicators
1:10 PM – 2:00 PM	Concurrent Session 3 Breakout Presentations
2:15 PM – 3:05 PM	Concurrent Session 4 Breakout Presentations
3:20 PM – 4:10 PM	Concurrent Session 5 Breakout Presentations
4:25 PM – 5:15 PM	Concurrent Session 6 Breakout Presentations
6:15 PM – 7:00 PM	Ticketed Dinner (cash bar)
7:00 PM – 8:15 PM	Awards Ceremony Speaker: Dr. Carolyn Williams , Senior Education Advisor Title: <i>“The Power of Possibility”</i> Sponsored by: YELLOW
8:30 PM – 10:00 PM	WorldStrides and VAST Regional Directors present “A Passport to Travel” Join us for a fun social evening and explore eight amazing locations through interactive activities. Dancing, DJ, food, limited drink tickets included, and some great prizes are up for grabs.

Saturday November 12, 2022

7:30 AM – 10:30 AM	Registration Desk Open
7:30 AM	Continental Breakfast in the Exhibit Hall
7:30 AM - 12:15 PM	Exhibit Hall Open
8:30 AM - 9:20 AM	Concurrent Session 7 Breakout Presentations
9:35 AM – 10:25 AM	Concurrent Session 8 Breakout Presentations
10:40 AM – 11:30 AM	Concurrent Session 9 Breakout Presentations
11:30 AM – 12:15 PM	Last Chance to Visit the Exhibit Hall (Exhibitor Door Prizes) (no other events scheduled, all exhibitors open till 12:15 pm)
12:15 PM – 12:30 PM	Pickup Ticketed Box Lunch to eat during General Session III
12:30 PM – 1:45 PM	General Session III , Meet your VAST Officers Speaker: Dr. Bruce Holmes , NASA Title: <i>Hey Dude! Where’s My Flying Car!?</i> Sponsored by: Virginia Aviation (Extra-Special Door Prizes Giveaway)
2:00 PM – 4:00 PM	Ticketed Field Trip #5: The Chesapeake Bay Foundation’s Virginia Watershed Environmental Education Program





THURSDAY AFTERNOON PRECONFERENCE WORKSHOPS

NOVEMBER 10, 3:15 PM-5:00PM

Preregistration is required, cost is \$5.00 per workshop (nonrefundable).

The deadline to register for a workshop is October 31.

Register for a workshop when you register online for the PDI.

Register for only one workshop since all three meet simultaneously.

<https://vast.wildapricot.org/2022pdi>

Elementary School Workshop

Building Science and Math Lesson Integration with STEM Challenges

This session will dive into a model STEM lesson where science and math concepts are equal partners in understanding a phenomenon or solving a problem. Participants will be engaging in constructing a model, testing their model, and collecting data. Next, we'll look at the need to present this data in a way to promote explanation which moves the participants into a math mini-lesson on data and measurement.

Presenters: Angie Meredith and Pam Caffery, Hand2Mind

Middle School Workshop

Balloon Aerodynamics Challenge

The NASA eClips Team will introduce and model the Balloon Aerodynamics Challenge that places students in the role of scientists and engineers as they design, measure, build, test and redesign a neutrally buoyant helium balloon system. Through this problem-based approach, the participants will explore foundational concepts of force, motion and Newton's Laws. Team building skills of collaboration, creativity and critical thinking will set the stage for this design-based experience.

Presenters: NASA eClips Education Team, National Institute of Aerospace Center for Integrative STEM Education
Dr. Sharon Bowers, Senior STEM Educator, Joan Harper-Neely, STEM Education Specialist
Betsy McAllister, Hampton City School Educator in Residence

High School Workshop

Introduction to Small Unmanned Aircraft Systems (sUAS, or Drones)

The Virginia Space Grant Consortium coordinates several programs that train teachers on how to integrate geospatial technology and small unmanned aircraft systems (sUAS) into the classroom. This workshop will give teachers an introduction to sUAS, the new VDOE course, and the FAA Part 107 Remote Pilot Certificate. The target audience is high school teachers with little knowledge of sUAS. Teachers will be introduced to various applications of sUAS and perform some safe hands-on drone flying.

Presenters: Chris Carter, Deputy Director, Virginia Space Grant Consortium
Dr. Scott Bellows, Technical Programs Coordinator, Virginia Space Grant Consortium
Julie Young, Program Head--Mechanical Engineering Technology and Unmanned Systems, Thomas Nelson Community College



TICKETED FIELD EXPERIENCES

NOVEMBER 10-12

Preregistration is required, cost is \$10.00 per field experience (nonrefundable),

The deadline to register for a field experience is October 31.

Register for a field experience when you register online for the PDI.

<https://vast.wildapricot.org/2022pdi>

Thursday PM Field Experiences (3:15pm – 5:00pm)

FT #1: William and Mary field experience

Join faculty from William and Mary on campus for field-based investigation of a water site. Paddling, specimen collection, and analysis covering geological history and chemistry concepts.

William and Mary Faculty

FT #2: Conservation Laboratory at the Colonial Williamsburg Art Museum

Tour the Conservation, Paint Analysis, Paper Conservation Lab, and Textile Labs, learning what behind the scenes work happens to create engaging museum exhibits. What science concepts are involved in art museum curation? Come find out!

Colonial Williamsburg Art Museum Staff

Friday AM Field Experience (8:00am – 12 noon)

FT #3: Archaeology and Education at Fairfield Plantation

Join the Fairfield Foundation for a hands-on archaeological experience at Fairfield Plantation. Tour the c. 1694 manor house ruins, learn about the organization’s educational programming both at the site and in the classroom, and get your hands dirty digging side-by-side with Fairfield archaeologists. All equipment and instruction will be provided. Participants should wear close-toed shoes and clothes they don’t mind getting dirty.

Dr. David Brown, Thane Harpole, and Anna Rhodes, Fairfield Foundation

Friday PM Field Experience (1:00pm – 5:00pm)

FT #4: York River State Park exploration of wetlands and global climate change indicators

A species rich series of wetland types occurs along a salinity gradient at York River State Park. Participants will contrast wetland types, core wetland trees, discuss evidence of sea-level rise and be invited to participate in a year-long Hands-On research collaboration with researchers at Christopher Newport University.

Facilitator: Dr. Rob Atkinson, Christopher Newport University

Saturday PM field Experience (2:00pm – 4:00pm)

FT #5: The Chesapeake Bay Foundation’s Virginia Watershed Environmental Education Program

While paddling freshwater, non-tidal rivers and streams, students and educators examine the relationship between human activities and water quality in the Chesapeake Bay watershed. Hands-on activities encourage sensitivity and knowledge of local ecosystems, giving relevance and greater understanding to classroom curricula. Our program staff provides opportunities for careful observations, data collection, analysis, and synthesis of information gathered during the field study experience. They encourage participants to explore the complexity of the watershed, and to see themselves as part of the solution. Come experience a mini field experience. This field experience occurs after the close of the PDI, participants will provide their own transportation.

Cindy Duncan, Chesapeake Bay Foundation

2022 ANNUAL PROFESSIONAL DEVELOPMENT INSTITUTE

November 10, 11, 12

DoubleTree by Hilton, Williamsburg VA

“Reconnecting Virginia’s Space, Place, & Contributions to Science”



Our expedition to Williamsburg to celebrate 70 years of advocating for quality science education will include local field experiences, Virginia based Keynote Speakers, celebrations of all that Virginia provides us from indigenous culture, sea to summit geographic marvels, natural resources, pioneering scientific discoveries, and more! Come celebrate and learn with us in Williamsburg this November!

This year’s theme, "Reconnecting Virginia’s Space, Place, & Contributions to Science" comes to life within the logo through thoughtful symbols representing each of the theme’s elements. Claiming the center space of the logo is the *Chesapecten jeffersonius*, state fossil of Virginia found in the same region as this year’s Professional Development Institute and in 1993 with the efforts of high school students, officially named the state fossil. The red salamander commands the lower left edge of the logo, representing the efforts of young 4-H members of Virginia to protect them, leading to the 2018 law naming the red salamander as the official salamander of Virginia. Both of these elements demonstrate the importance and results of citizen science, field studies, and local leaders contributing to scientific investigations. The perimeter of the logo encapsulates all of the components with woven eastern redbud branches and blooms. This symbolizes not only the native redbud tree, but the interconnectedness of all of the opportunities that Virginia has to offer from rich Indigenous history and presence in the commonwealth, sea to summit geography, and trailblazing scientific discoveries. Altogether, these icons representing the great Commonwealth provide a platform to advocate for science in Virginia, in all learning spaces for all learners.

The In-Person Professional Development Institute Features:

- In addition to presentations related to our theme there will be concurrent session presentations in all subject areas for grades K-12.
- General sessions featuring speakers who will challenge you with up-to-date scientific discoveries and instructional strategies.
- Interact with vendors in the In-Person Exhibit Hall as you collect samples of new instructional materials and explore cutting-edge technologies.
- Interact with your colleagues in person and on the WHOVA app.
- The PDI Program will be on the WHOVA app and this page and available for planning prior to the PDI.

Check the VAST website frequently for [updates](#) on the 2022 PDI.

Links to more about the 2022 VAST PDI



Donna Sterling Institute Information (separate registration from the PDI) [Link](#)

Sterling Institute Registration [Here](#)

2022 Online Registration & Fees for the In-Person PDI attendees, presenters, exhibitors [Link](#)

Ticketed Thursday Afternoon Workshops [Link](#)

Ticketed Field Experiences [Link](#), [newsletter page 6](#).

VAST W-9 Form [Link](#)

2022 PDI Concurrent Session Presentation Proposal Form (now open until **June 15**, all presenters must register and pay by **Sept. 23** to be included in the final program) [Link](#)

2022 PDI Schedule at a Glance (draft) [Link](#)

2022 PDI General Session Speakers [Pages 10-11 of the newsletter](#).

General Session I, Thursday 6:00 pm, "*Science is Everywhere, Science is for Everyone*", Dr. Jeanette Davis AKA Dr. Ocean [Link](#)

General Session II, Friday 10:40 am, "*The Science of Making Science Accessible: DNA and Community Building*", Dr. Raquel Fleskes, University of Connecticut [Link](#)

General Session III, Saturday 12:30 pm, "*Hey Dude! Where's My Flying Car?*", Dr. Bruce Holmes, NASA

2022 PDI Concurrent Session Presentations List (coming soon)

2022 PDI Sponsor and Exhibitor List (coming soon)

2022 DoubleTree by Hilton Williamsburg Information and Room Reservation (now open) [Link](#)

2022 PDI Sponsorship Opportunities [Link](#)

2022 PDI Exhibitor and Vendor Information, Prices, Advertising and Form [Link](#)

Summer 2022 VAST Newsletter with PDI information

October 2022 VAST Newsletter with PDI Information

2022 post-PDI Survey and Certificate of Attendance (open after the PDI)

Contacts

Susan Booth, Executive Director, executive.director@vast.org

John Kowalski, PDI Chairman, pdi@vast.org



Your ToDo List

- Register for the PDI, ticketed workshops, field trips, and meals now.
- Hotel Reservations at the per diem rate is open.
- Register for the Donna Sterling Institute
- Plan to present at the PDI

Come join us in Williamsburg as a presenter, attendee, and/or exhibitor.

We look forward to being able to be together again in person!

Future PDIs:

- | | |
|------|--|
| 2022 | DoubleTree by Hilton Hotel, Williamsburg, Nov. 10-12 |
| 2023 | Hotel Roanoke and Conference Center, Nov. 16-18 |

ICON A5 Introduction to Flight Program

Would you like an airplane to visit your school to assist in teaching an aviation lesson? The ICON A5 Program is FREE and brings a hands-on aviation lesson and educators to your school.

The ICON A5 will be used as an aviation education tool to introduce students to aviation and encourage them to consider aviation as a future career. Many young people today have never had the opportunity to see a general aviation aircraft up close or to sit inside one. The ICON A5 will give them an opportunity to get close to a modern amphibious airplane as well as the chance to learn more about flight and the aviation industry and to ask questions.



The ICON A5 will be transported to schools and other locations on a trailer so that students can view and sit in the airplane (2 at a time). It will be towed by a Transit van. Aviation professionals will be available to talk with students about aviation careers, the science of aviation, and answer questions.

Some events for older students may also include a demonstration of a flight simulator contained in the Ford Transit Van that hauls the ICON A5.

Students who are in K-12 classrooms right now are the ones who will be the future of the aviation industry. It is our mission to help bring aviation lessons to the classroom at a young age so students are aware of the variety of careers available.

We look forward to bringing this fun and educational program to your school!

Contact Betty Wilson at the Virginia Department of Aviation (betty.wilson@doav.virginia.gov) for more information about how to get the ICON A5 to your school.



Virginia Enrichment Repository for Science Educators

Simply log in to the [VAST.org](https://vast.org) webpage and choose the [VERSE](#) on home page header to access content created by VAST members and presenters for your professional learning and development.

View PDI session recordings
from the 2021 and 2022 VAST
PDI Archive - now.

Visit VERSE frequently
to watch it grow.

Work in
Progress!

Customized professional learning is the new standard for both formal and informal educators. Access to both current and vetted learning resources allows an educator flexibility in both topic, medium, and usage. As an innovative association, VAST recognizes that through its multi-decadal archive of both the *Journal of Virginia Science Education* and *The Science Educator* these resources continue to hold value for current and new VAST members. The VERSE will allow subject specific searches for archival topics in both article and video segments as past PDI presentations are added and future regional and other professional materials are contributed. Membership use will vary between personal learning which can include recertification to members using materials for school site use within a grade level, department, and/or PLC.



Content articles from *The Science Educator*, the *Journal of Virginia Science Education*, and sessions from the last two virtual Professional Development Institutes have been ‘tagged’ with content and grade level identifiers to help target both your interest and learning.

As you collaborate with your school PLC team(s) or work to accumulate professional development points for your next Virginia teaching license renewal, consider the quality VAST materials to inspire, innovate, and enhance your teaching and student learning.

Remember that the VERSE is expanding in 2022, check back frequently and consider how you can add your unique talent and educator insight! It is a work in progress. Newsletter articles from 2012-2021 are accessible currently and are protected by requiring members to log in. The main tab takes you to the links page. At the links page you can select icon specific pages to access specific pdf’s. Please note that many articles contain elements of multiple tags and are represented the on multiple icon page list.

Need help navigating, contributing to the VERSE, or suggestions on how to seek PD points? Please contact Mike Pratte VERSE Chair at vice.president@vast.org.

Also remember: VERSE is only available to VAST members! Not a member? Visit [VAST.org](https://vast.org), and click on the “Join” button. Membership is only \$25 a year for all of these resources!





Wants You



**Present at the 2022 VAST PDI, November 10-12,
DoubleTree by Hilton, Williamsburg**

VAST would like to invite you to participate and to be a PDI presenter this November. Please consider sharing your ideas, successes, and expertise with others. Bring your career to a new level by teaching your colleagues. Partner with a colleague or two. Can you imagine how many more students you could affect by sharing your special technique, lesson, project, or field experience with teachers?

If you would like to present, the concurrent session presentation proposals are due by June 15. Use the link below for the form and more details.

Late proposals will be considered on a space-available basis. Presenters will be notified regarding their proposals by the end of July. Up to four presenters per presentation will be listed in the program.

[2022 VAST PDI - Concurrent Session Presentation Proposal Form](#)

PDI Registration Is Open

Presenter: \$155

Attendees:

\$170 Earlybird

\$205 Regular Registration

\$99 Full Time Student Earlybird

\$130 Full Time Student

\$100 Saturday Only



**VAST PDI
INFORMATION:
Forms and
Registration**

2022 Donna Sterling Institute: Finding Smart Solutions in Energy and Climate Science

Join us as we learn to apply a problem-based learning (PBL) approach to investigate and understand climate and energy, engage in National Energy Education Development (NEED) activities to support understanding of climate and alternative energy, and meet your students' needs.

After attending the 2022 Sterling Institute, teachers will be able to address [Virginia Science Standards of Learning](#) for grade K-12 students associated with climate change including natural resources and conservation, earth resources, living systems, and energy transfer. The Institute also gives teachers tools to integrate the scientific investigation, reasoning and logic standards to teach climate change within this approach.

Donna Sterling's vision of teaching using a PBL approach integrates science with math, engineering, technology, and language arts. She was committed to meeting the diverse needs of our students through culturally responsive and equitable practices.

The 2022 Sterling Institute is planned for **8am-3pm, Thursday November 10, 2022**, in Williamsburg, VA. The Sterling Institute which supports teachers in developing and enacting PBL units in their instruction through a 7-hour professional development experience. The registration fee of \$75 **includes an on-site hotel room for Wednesday night**, breakfast, and lunch. **Apply Now!** For more information or questions, contact Robin Curtis: secretary@vast.org. [See page 17 for more information](#)

2022 Professional Development Institute "Reconnecting Virginia's Space, Place & Contributions to Science" November 10-12, 2022



Double Tree by Hilton, Williamsburg
50 Kingsmill Road, Williamsburg, VA 23185
phone: (757)220-2500

Complete information about the 2022 PDI hotel can be found on the [Annual PDI page](#). Click on Hotel Information, Prices, Online Reservation Form, WiFi, Menus, and Parking.

The link to access the 2022 VAST PDI Double Tree reservation page is active.

Hotel Room rate: \$101.00 + 12% tax + \$2.00
occupancy fee per night = \$115.12 (The GSA per diem government rate may go up or down in August from this estimation.) Check for updates on the VAST website.

To register for hotel: VAST Hotel Reservation Link All reservations need to be booked before October 8, 2022 (based on availability). The hotel reservations phone number is (800) 222-8733 and the VAST code is VAS.

Be sure to check the VAST website for updates and over-flow hotels if they are needed. Meal menus for the PDI, the hotel floor plan, WiFi and parking information are available on the website.

Go to the VAST Annual PDI page for up-to-date information.

2022 PDI Speakers

Meet the four exciting general session speakers for the upcoming, in person, Professional Development Institute. We are so pleased to introduce them. Plan to attend and to be inspired by them.



Dr. Jeanette Davis AKA Dr. Ocean

<https://www.drjeannedavis.com>

General Session I, Thursday, 6:00 pm

Science is Everywhere, Science is for Everyone: The Art of Storytelling

Dr. Jeanette Davis also known as Dr. Ocean is a Marine Microbiologist and author of best-selling children's books *Science is Everywhere*, *Science is for Everyone* and *Jada's Journey Under the Sea* created to explore and diversify science. Dr. Ocean's research ranges from fisheries management to bacterial symbiosis to find new medicines from the ocean. She is cited in *Science* for helping to discover a marine microbe that fights cancer. Dr. Ocean attributes her success to the strong foundation that she received at Hampton University. Dr. Ocean continues to be an ocean advocate and travels around the world to help manage ocean resources.



Dr. Raquel Fleskes

<https://www.raquelfleskes.com/>

General Session II, Friday, 10:30 am

The Science of Making Science Accessible: DNA and Community Building

Raquel Fleskes is an anthropological geneticist conducting post-doctoral research in the Department of Anthropology at the University of Connecticut. Her research falls at the intersection of ancient DNA, archaeology, and community engagement, and has been funded by the National Science Foundation and National Geographic Society. She uses ancient DNA and population genetic methods to understand the population history of the colonial period of North America. These methods are then interpreted alongside archaeological and other bio-molecular techniques to understand lived experience, ancestry, and relationships on the early colonial American frontier. She is passionate about science education to engage students of all ages in the process of learning and discovery.



Dr. Carolyn Williams

<https://coastalvirginiamag.com/article/the-first-mom-of-music/>

Awards Ceremony, Friday 7:00 pm

The Power of Possibility

Dr. Carolyn Williams was the former Director of Education and Board Chair for From One Hand To Another (FOHTA), a non-profit that provided supplemental education to under-served youth. As an educator with extensive years of experience with the Virginia Beach City Public School System ranging from the classroom to administrative responsibilities, she is a graduate of Old Dominion University. Ms. Williams earned her Doctorate Degree from Regent University. She was a member of and graduated from the Futures Academy (VBCPS), served as President of Virginia Beach Library Association, sponsor of Diversity Leaders (VBCPS), and worked at individual schools. Dr. Williams was a member of National Education Association, Virginia Education Association, and Phi Delta Kappa. The ThinkGreen curriculum written by Dr. Williams for the Urban League Young Professionals Hampton Roads chapter won a national award. She has also written, ThinkRead a reading curriculum used at one of FOHTA's summer camp locations along with ThinkInvestigate: Science Fair Projects for the Titusville, FL summer camp location (FOHTA).

Currently, Dr. Williams is a Senior Education Advisor for YELLOW, an organization to "EVEN THE ODDS" for all youth through education.

Education is an integral part of Dr. Williams' life; she has great enthusiasm for both attaining and sharing knowledge. Her other great love is her family.

Dr. Williams believes in the life mission to "Never be content with someone else's definition of you".



Dr. Bruce J. Holmes

<https://www.linkedin.com/in/brucejholmes/>

General Session III, Sat. 12:30 pm

Hey Dude! Where's my Flying Car!?

Remember the 1960's cartoon series *The Jetsons*? Ever wonder why George's flying car never made it into the 21st century? I am here to introduce the very viable plausibility that well within the lifetimes of the students you teach, and even likely within my lifetime, we will see modern day versions of George's flying car. Why and how might that now be? My own story in aviation started when flying with my father in our family airplane when *The Jetsons* first appeared and watching him fly from our neighborhood in the Chicago suburbs to the downtown waterfront airport, Meigs Field, and thinking, "Well, this is how everyone should be able to get around." Years later, during my NASA career as an aerospace research engineer, elements of that thinking stayed with me as my like-minded colleagues and we worked with industry and universities to develop the enabling technologies that now will support the concept of personalized, democratized, individualized air mobility – George Jetson-style. My presentation describes the story leading to Virginia's Department of Aviation decision to secure one of the most modern and exciting small airplanes, the ICON A5 amphibian aircraft, for use in STEM outreach. The story follows the technology development pathway of the 1990's and early 2000's that led to the production of the ICON A5. This airplane embodies virtually all the innovations that had roots in NASA-led public-private research partnerships focused on creating a new base of technologies for the U.S. small aircraft industry. The ICON can serve to inspire students today who may choose to follow career paths in aviation, aeronautics, or aerospace.

Nominations, Nominations, Nominations!!



After what has arguably been the toughest school year of anyone's career, wouldn't nominating a colleague for an award for their hard work this year be a balm?

RISE Awards: VAST invites you to do so now! VAST's RISE awards (Recognition in Science Education) awards program is just the thing. There is a wide array of categories:

- ✿ Remote Teaching (Elementary, Middle, High)
- ✿ Elementary (K-5)
- ✿ Middle School (6-8)
- ✿ Biology
- ✿ Chemistry
- ✿ Earth Science
- ✿ Physics
- ✿ Environmental Science
- ✿ At-Risk Students (K-12)
- ✿ Resource Teacher (examples: Technology, Science Resource, etc.)
- ✿ Science Educator (examples: Science Supervisor, Informal Educator, Principal, etc.)
- ✿ University/College Faculty
- ✿ Community Partnership (examples: Businesses, Politicians, Other Organizations)

So, how do you do this? Gather some materials, including letters, videos, etc. You can upload up to five items. Then, complete the application here! Deadline for all applications is September 30th, 2022.

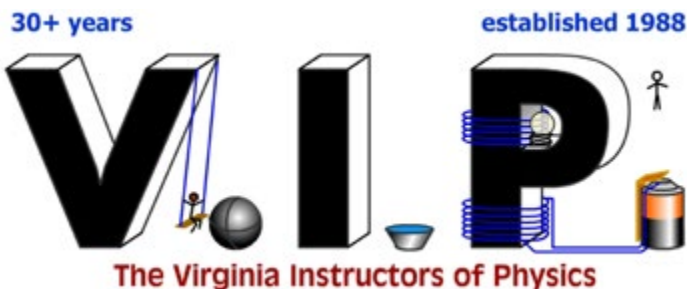
[Link to RISE Awards](#)

Donna Sterling Award for Exemplary Science Teaching: Are you a classroom teacher (K-6 AND Secondary) who has a dream to do something big? Do you want to plan a PD expedition of your own to the Amazon? How about to the American southwest? Or, do you have a project closer to home that \$4000 would help make happen? Then, apply for this award here! For 2022, there will be one K-6 award AND one secondary award. Deadlines for these grants are August 15th, 2022.

[Link to Awards](#)

Grants: Do you have an innovative idea that will expand learning opportunities for your students that just needs \$200-\$500? Well, VAST just happens to provide Teaching Mini-Grants! Learn more and apply here. The deadline for applications is September 30th, 2022.

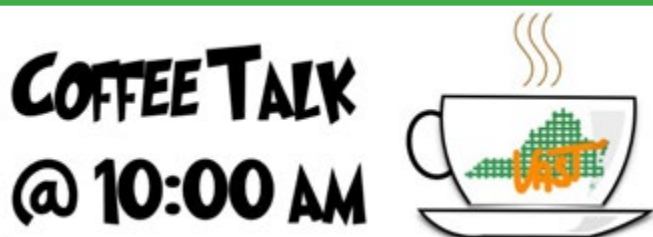
[Link to Grants](#)



Andy Jackson
Harrisonburg High School
Harrisonburg

The Virginia Instructors of Physics hosted its annual spring meeting on Saturday, April 23. We had a very full day meeting from 10:00 to 2:30 pm. We opened up our meeting with some social time as people arrived and then we were off across James Madison's Campus to the Madison Accelerator Lab. Dr. Kevin Giovenetti gave us a tour of the facility that once served as a source of radiation for cancer treatments, but is now used for undergraduate research in astronomy and physics. This provided a great springboard for discussions about the place of modern physics topics in high school physics courses. We had a great lunch together in D-Hall courtesy of the JMU Astronomy & Physics Department. We gathered together again in the Physics & Chemistry Building for a few demos to share and a couple of "make and takes". Attendees took home directions and materials for the construction of monopolar motors and materials for a Lenz's Law demo kit. These materials were courtesy of funding by VAST. As we finished our make and takes, Gabbie Meis, of Qubit by Qubit joined us by Zoom to present about the wide variety of programs that are available for our students to learn some quantum physics and quantum computing in high school.

In a tradition almost as old as the organization, we held our annual election of our president and vice president. Seth Berkeley of Harrisonburg High School was elected to the office of president and Michelle Ewing of Kettle Run High School will serve as our vice president. If these topics sound like things that would enrich your teaching, please check out the VIP website that Tony Wayne maintains for the group at <http://vipphysics.org/> and look for the VIP presentations at the VAST PDI in Williamsburg in November!



Coffee Talk @ 10 with VAST Content Chairs. VAST wants you to remember you are not in this alone.

Looking for a way to collaborate with other teachers in your content? Then come be a part of the of the VAST community.

Coffee Talks are held on Saturdays and there is no cost to register.

Coffee Talk @ 10 Dates:

June 4 - End of Year Celebration, September 24 - Back -2-School

You are invited to a Zoom meeting.

When: June 4, 2022, 10:00 AM

Register in advance for this meeting: [REGISTER](#)

After registering, you will receive a confirmation email containing information about joining the meeting.

Donna Sterling Institute

Using Problem-based Learning in Finding Smart Solutions in Energy and Climate Science

November 10, 2022; 8am-3pm

In Person: Double Tree by Hilton, Williamsburg, VA

We are pleased to announce the 2022 Donna Sterling Institute with Don Haas as the featured speaker and in conjunction with NEED Energy.

Participants will:

1. Use a PBL approach to learn about climate and energy.
2. Engage in National Energy Education Development (NEED) activities to support understanding of climate and alternative energy.
3. Learn and apply the key components of a PBL unit to meet Virginia Standards and the needs of your students.

Registration includes a hotel room for Wednesday night, breakfast and lunch, plus 7 hours of recertification points.

Donna Sterling Institute Registration: \$75

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

<https://vast.wildapricot.org/event-4766879>

Registration Ends October 31, 2022

Donna Sterling's vision of problem-based learning (PBL) as a means of teaching and integrating science with math, engineering, technology, and language arts is timeless. She was committed to meeting the diverse needs of our students through culturally responsive and equitable practices. Her legacy lives on in the Sterling Institute which supports teachers in developing and enacting PBL units in their instruction through a 7-hour professional development experience.

Here is your chance to learn how to implement this powerful teaching strategy!

Instructors: Jaclyn Claytor, Robin Curtis, Dr. Elizabeth Edmondson, Emily Hawbaker, Suzanne Kirk, Dr. Jennifer Maeng, Dr. Anne Mannarino, Dr. Juanita Jo Matkins, Dr. Jackie McDonnough, LoriAnn Pawlik, and Dr. Eric Pyle Retiring President NSTA.

Elementary (K-6) & Secondary (6-12) Teachers: Apply for the 2022 Donna Sterling Exemplary Science Teaching Award

Donna Sterling was a visionary science educator with a passion for working with science teachers and developing habits of inquiry-based teaching. 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 2022, the award will be given to an exemplary elementary teacher and an exemplary secondary teacher. **For the elementary award the 6th grade teacher must be teaching in an elementary setting. For the secondary award the 6th grade teacher must be teaching in a secondary setting such as middle or high school.**

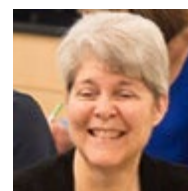


Becky Schnekser and Juanita Jo Matkins

Each awardee will receive a total of **\$4000**. In addition, registration and travel costs will be reimbursed to attend the 2022 VAST PDI to receive the award and to the 2023 VAST PDI to present a session on the professional development experience and outcomes. Each awardee will receive \$3000 at the VAST PDI in 2022, held at Williamsburg November 10-12, 2022. The remainder will be awarded after the awardee presents at the next VAST PDI and submits an article to the newsletter *The Science Educator* or the *Journal of Virginia Science Education*.

Deadline for Applications: August 15, 2022

Donna Sterling



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 subjects and 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 2023 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 August 15, 2022.

Submit applications and letters of recommendation to Dr. Juanita Jo Matkins, jjmatk@wm.edu.

The Forgotten Ones

My hope is that the Memorial to Enslaved Laborers will serve not simply as a monument to the past, but as a vibrant, living space for the University and community to come together to learn, remember, and continue to try and close the gap between our aspirations and our everyday realities.

—James E. Ryan
President, University
of Virginia

Embedded in the earth near Jefferson's famous Rotunda on the University of Virginia grounds, lies the Memorial to Enslaved Laborers, those who actually constructed it. Both share the same 80-foot diameter, though the Memorial's circle is broken, suggesting open shackles, and inviting a comparison with the Central and West African origins of the ring shout, an ecstatic and transcendent ritual practiced by enslaved persons in the West Indies and the southern United States, all accompanied by the rhythms of clapping hands and shuffling feet. The outlines of two intersecting cones create a pair of granite walls, the outer one containing a growing list of some 473 names of those who labored to create the University, the inner ring containing a channel of circulating water beneath which are brief accounts of and by enslaved laborers between 1619 and 1867. There are placeholders on the outer wall for more of the 4,000 workers between 1817 and 1865, yet to be discovered; outlines of the profiles of laborers line the top of the outer ring.

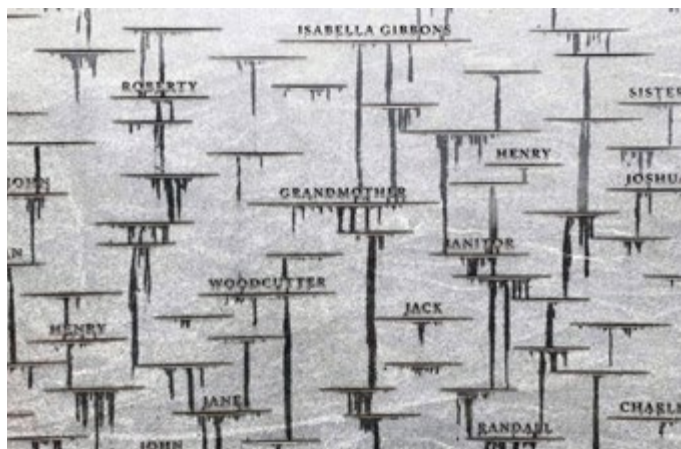
The apex of the inner parabola is the source of the stream of water which flows in two directions: counterclockwise back in time until 1619, the same rotation as the ring dance, and clockwise forward from the 1820's until 1890, ending with a searing account of working conditions in the words of an enslaved teacher, Isabella Gibbons. We are reminded of the prophetic words from Old Testament writings: "But let justice roll down like waters, and righteousness like an everflowing stream." In another sense, that flowing water is reminiscent of the old spiritual, no doubt known by those remembered and honored by this Memorial: "... 'cause I've got one more river to cross / One more mountain to climb / One more valley that I gotta go through / I'm leaving my troubles behind." There is a poignant parallel between the Old Testament exodus and the anticipated freedom for those enslaved laborers.



The Memorial to Enslaved Laborers, University of Virginia campus. The circular shape of the memorial echoes broken shackles and also the "ring shout," a traditional dance of enslaved African Americans.

Photo by Sanjay Suchak, University Communications.

As time's stream has flowed, there are, of course, countless persons who have lost their lives and been forgotten: teachers and students at Columbine High School (1999), at Virginia Tech (2007), at Sandy Hook Elementary School (2012), at Parkland High School (2018), to say nothing of those millions who have suffered and died in history's ubiquitous global conflicts. All those men and women have names; only the limitations of our memories and records have made them forgotten.



After a rain, shot of the Memorial to Enslaved Laborers inner wall, with names and memory marks honoring members of UVA's enslaved community.

Photo Credit: Höweler + Yoon Architecture

Here are a few, some named, some nameless, from the Memorial's wall; try actually saying their names to yourself as you read:

Aaron	Peter Willis
John Smith	Jane Casey
Seamstress	Billy
Jenny	George
Edmund	John Simpson
Kennedy	Isaiah
Washington	Farmer
Nancy	Brickmaker
Tinner	Midwife
Jim	Pianist
Woodcutter	Sally
Father	Stableman

Johnson
Daniel
Daphne
Patsy

Bellringer
Grandmother
Joiner

More general reminders from beneath the stream flowing on the inner ring:

1619 1st written mention of enslaved Africans in Virginia.

1821 William Green works as a blacksmith at the UVA construction site. Dick and Ned work as carpenters.

1824 Tom runs away. He is captured 50 miles from Charlottesville and jailed in Louisa County before the UVA overseer returns him to work at the university.

1861 500,000 enslaved African Americans live in Virginia. More than half of the Albemarle County population were enslaved (14,000).

1865 UVA begins to pay wages to former slaves.



Photo Credit: George Dewey

Inscriptions about enslaved laborers, beneath flowing water, Memorial to Enslaved Laborers.

It seems significant that the actual impetus for the design of the Memorial to Enslaved Laborers came from students and known descendants of enslaved laborers. A student group for the MEL was formed in 2009, and the Board of Visitors approval came in 2012. A virtual dedication was held in the Spring of 2021. Equally significant, the President's Commission on the University and Slavery (under then-President Teresa Sullivan, 2013) actually *listened*: "...in order to earn enough trust even to begin a conversation about truth-telling and repair... rather than presenting pre-conceived ideas, the design team listened." ¹.

As classroom teachers there lies always before us the ideal of listening to the voices around us: students, staff, community. The somewhat cliched exchange puts it, "I don't teach science, I teach students." Rather, might we say, "I learn from my students"?

Here is how Rita Dove, a former Virginia and United States Poet Laureate and current faculty member at UVA, addresses the issue in a line from her poem, "Postlude." After her quote from Massenet's opera, "Cendrillon", "Stay by the hearth, little cricket," she addresses the poem's complainer who finds the cricket merely an annoyance: "As usual, you're not listening: Time stops only if you stop long enough to hear it." ²

Is not the essence of science to see things from multiple perspectives, or as physicist Richard Feynman once wrote, to take the world from another point of view? Albert Einstein as a patent clerk in Bern wondered, too, at what time would be like if he rode away on the light ray from a hand on the city clock tower; that is, at the speed of light. Years followed and multitudes of complex equations, easier to say than to comprehend, but to truly *listen*, must we not stop long enough to hear those voices? What would we hear if we travelled at sound's speed, or what would we see if we travelled at light's speed? What would we learn if we stopped long enough to thoughtfully listen to our students?

The current president of UVA, James Ryan, emphasized the MEL as a "living space for the University and community to come together to learn, remember, and...to try and close the gap between our aspirations and our everyday realities." Chartered in 1819, first classes in 1825, the first American university to offer degrees in astronomy and botany, yet the University remained a center of pro-slavery thought through the 1850's, and only regularly admitted Black students nearly 150 years after its first students arrived. As an inscription at the Memorial to Enslaved Laborers puts it, "Forced labor, incalculable suffering, and the struggle to live with dignity were the daily experience of the enslaved African Americans who shaped the institution's first half century. This memorial is erected as a permanent tribute to them." Do not "living spaces," by definition, grow and communicate and address the discrepancies which exist between aspirations and realities? The University of Virginia and surrounding community regard this process of remembrance and tribute as ongoing work. Again, do we not as teachers regard our own work as (actually by definition) ongoing and incomplete?

There seems to be a vibrant, if not urgent, message here for us as educators. The lofty closed dome of the Rotunda as the heart of a university's academical village is now grounded in location and symbolism by an open pattern in the earth.

Are there not other ways we can honor and

re-energize the forgotten ones in our own classrooms and laboratories? So many students slide unintentionally beneath our consciousness, especially during these past two years of pandemic-induced virtual realities. Almost a year ago, *Education Week* featured an article which used the business world's decision-making acronym, VUCA, to highlight educational leadership in navigating the world of volatility, uncertainty, complexity, and ambiguity. [EdWeek, 9 June, 2021] Surely, we have all felt the impacts of these four challenges, whether recovering from a destructive fire, wrestling with school bond issues, or making decisions over what is best for our kids when it may produce discomfort for teachers (or parents). There is also the issue of the increase in child-abuse cases during Covid-19, the struggle with class behavior in returning to face-to-face teaching.

There has been a sobering 2020 UNICEF report on children's well-being in the world's 29 richest countries, evaluating data from education, housing, health, overall life satisfaction, the United States coming in 26th overall. In a conservative Florida district, voters overwhelmingly approved a new property tax to create the Escambia Children's Trust in order to combat the statistics that 39% of the county's Black children live in poverty, compared to 13% of white children. In our schools, we face both disproportionate expectations and blame for problems such as these. It is sometimes too easy to miss the opportunity to "close the gap between our aspirations and our everyday realities." Even the chances to thank our students, colleagues, or custodians. Just as many of the buildings at UVA rest on figurative and literal foundations laid by enslaved laborers, do not our own buildings and life-styles rest upon the labor of forgotten custodians, trash details, and clean-up crews?

Finally, the positive contributions of our forgotten ones are both truly remarkable and grossly overlooked. Leaders who change the face of civilizations emerge globally, yet none of those changes could exist were it not for the millions upon millions of forgotten ones. Preacher and civil-rights champion, James Lawson Jr. addressed this very concept in a recent interview [Christian Science

Monitor, 25 April 2022]: "Most of the major changes in the human journey have been changes of the mind, of the spirit, intellectual discoveries, discoveries of where we are in the universe." He cites the examples of Rosa Parks and Martin Luther King, Jr in the civil-rights movement of the '50's through '70's. Persons like Ruby Bridges, Rosa Parks and James Meredith gained fame not only for their strength, but for their determination and perseverance in speaking up for the forgotten ones.

The Black nonagenarian artist, Faith Ringgold recently explained [PBS, 12 April 2022], "I was giving myself the freedom to take another look at the possibilities of what life could be. I didn't have to just settle for what I was given, especially when it was unsettling."

As the poet, Toni Morrison, has written, "The function of freedom is to free someone else." When these things happen, the forgotten ones are no longer forgotten.

1. Louis P. Nelson, "Re-Seeing Slavery: The Memorial to Enslaved Laborers at UVA." *Sitelines Journal* (vol. xvi, no. ii, Spring 2021). https://www.foundationfor-landscapistudies.org/pdf/sitelines_spring21.pdf
2. Rita Dove, *Playlist for the Apocalypse*. 2021. W.W. Norton & Co.

George

A VAST Life Member, George Dewey is a former VAST President, former NSTA District VIII Director, Presidential Awardee, and Albert Einstein Distinguished Educator. He taught physics in Fairfax County, NBCT since 1999. He can be reached at: gtdewey3@outlook.com

Journal of Virginia Science Education

You are invited to write for JVSE, a peer reviewed journal. The next issue is the Winter Issue and submissions are due July 31, for publication on December 15.

The theme for the issue is **Place-based Learning**. VAST invites you to share lesson activities, solutions, and research associated with all you've learned. Submissions unrelated to the theme are also welcome. Sub-missions due March 1, 2022 and the Summer issue will be published July 1, 2022. See the journal website for details: <https://vast.wildapricot.org/Journal>. If you have questions, please reach out to Amanda Gonczi and Jenn Maeng, JVSE co-editors at journal@vast.org.



Holston River Quarries Inc.
June 17, 2022



Buckingham* Slate
June 24, 2022



Luck Stone, Culpeper Plant
July 22, 2022



Branscome Charles City Pit
July 29, 2022

**In Partnership with
Virginia's Transportation Construction Alliance
and
Friends of Mineralogy Virginia Chapter**

VAST Announces Summer 2022 Rockin' PD

Would you like to visit a quarry, collect rock samples, walk in the footprints of dinosaurs and experience modern mining in Virginia? These unique experiences are free of charge to VAST members and open to educators of all grade levels. Earn professional development hours, if approved by your school evaluators! For more information, registration and a photo of each site click on the link for each site. Attend one or all four drive-in field trips at four unique Virginia locations.

Tentative Dates for Tours of Operating Quarries

- **Salem Stone - Holston River Quarry**, Dublin VA, Friday, **June 17, 9:00am – 5:00pm**
Come take a dip in Ordovician Seas at Holston River Quarry!
[Holston River Quarry](#)
- **Boxley - Buckingham Slate**, Arvonion, VA, Friday, **June 24, 9:00am – 5:00pm**
Come Visit Buckingham Slate! One of the oldest continuous operation mines in the country.
[Buckingham Slate](#)
- **Luck Stone - Culpeper Quarry**, Culpeper VA, Friday, **July 22, 9:00am – 5:00pm**
Come walk with the dinosaurs at Luck Stone, Culpeper.
[Culpeper Dinosaurs](#)
- **Branscome - Charles City Plant**, Charles City, VA, Friday, **July 29, 9:00am – 5:00pm**
Check out some of the Youngest Sediments in Virginia!
[Sand and Gravel/Branscombe](#)



[REGISTER](#)



VAST Needs YOU!

Nominations for 2022 Positions



Come and serve your profession and your fellow educators with distinction and honor. Nominate someone, or yourself, for one of our open positions. A few are elected prior to the Fall 2022 PDI while others are open now!

Annually, VAST elects a group of individuals according to our current bylaw requirements. Consider nominating someone who you think would serve well in 2023 as:

President-Elect: The President-elect shall serve as the Co-Chairperson of the standing Professional Development Institute (PDI) of the year in which they will serve as President.

Secretary: The Secretary shall keep a permanent record of all business transacted by VAST; keep the minutes of meetings for the general membership, Executive Committee, and Board of Directors; distribute copies of the minutes to members of each group in a timely manner; and perform such duties as are usually incidental to the office. The Secretary shall be elected for a term of three years.

Regional Director (Regions 2, 4, 6, and 8 are up for 2023): Regional Director shall be elected from each of the eight (8) Department of Education regions. Directors shall be elected by the membership to serve a two-year term and may serve more than one term. Directors from even-numbered regions will be elected on even years, and those from odd-numbered regions will be elected on odd years. Directors will, within their region, promote VAST membership, regional professional development activities, and the VAST Professional Development Institute (PDI). Directors will serve as the coordinator of science leaders within their region and encourage an active and viable network within their region. Directors are expected to attend VAST Board meetings and provide a report on activities within their region. Directors shall actively participate as VAST leaders including submission of newsletter articles, awards nominations, and the solicitation of presenters for the VAST conference.

Download the pdf (link below) and nominate someone. Send your nomination to: Russell Kohrs at kohrsrh@gmail.com.

[CLICK to download a VAST Nomination Form. Nominate someone today.](#)

TEACHER Appreciation Week



AMERICAN
COLLEGE *of*
EDUCATION

You deserve our appreciation.



Enter to win one \$50 Amazon gift card

Scan the QR code to fill out the drawing form and enter for a chance to win!
Contest runs until May 31, 2022.

For complete contest rules, see bit.ly/3BEVmoC

For more information about ACE, please contact taylor.ingles@ace.edu.



Online Vaccine Educational Research Study



What is this study about?



Researchers from Georgetown University Medical Center and Hampden-Sydney College are conducting this study to help young people learn more about vaccines-what they are, what they do, and how they can help prevent diseases.

This research study has been approved by the Hampden-Sydney College Institutional Review Board (IRB) and is designed to find out if 10th grade students will learn new information after watching educational videos about vaccines.

Who can participate?

This study is open to any 10th grade student in the Virginia public school systems with access to a computer or mobile device with internet capability.

What will you need to do if you decide to participate?

It will take about 80-90 minutes to complete the study.

Participants will be asked to:

- Complete a brief survey with 16 multiple choice questions (10 minutes).
- Watch some educational videos. One group will watch some educational videos about vaccines. The other group will watch educational videos about the biology of cells. This will take about 60 minutes.
- Complete another brief survey with 20-25 multiple choice questions (10-15 minutes) after watching the videos.

One of the student's parents will need to give permission first and then the student will also need to sign a form agreeing to be involved in this study.

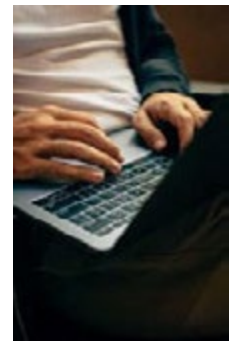
What will you get for participating?

All participants will have the opportunity to view the vaccine videos which contain important information about vaccines.

Participants who successfully complete the study will receive a check for \$60 for contributing their time to this research.

What if you have any questions?

If you are interested in participating or have any questions, please contact Dr. Edward Lewin's research team at mwolyniak@hsc.edu.



These materials are neither sponsored nor endorsed by the Board of Education the Superintendent of Schools, or VAST.

Meaningful Watershed Educational Experience: A Collaborative Approach

Barbara Adcock

Instructional STEM Coach, Powhatan County Public Schools

Powhatan County's fourth graders, bio 2 and ecology high school students recently participated in a MWEE. The high schoolers, after learning about indicators of stream and river health, guided the elementary students in learning stations at Fighting Creek Park, a tributary of the Appomattox River, and part of the Chesapeake Bay Watershed. The goal of the project was to give students a clear understanding of their role in the health of the Chesapeake Bay as a part of the watershed, and how they can determine the health of their community's waterways.

The students took part in a series of eight stations: making observations, sketches and listing the living things within a biocube placed in the forest floor or in the creek; taking part in a simulation of a water molecule's cycle through the Chesapeake Bay Watershed; learning to use a dichotomous key to identify native trees and plants; using maps and discussion to understand why the Chesapeake Bay Watershed is important to them and why what they do impacts it; determining the health of the creek by

collecting and identifying the macroinvertebrates; analyzing the food webs involved the macroinvertebrates and examining animals tracks to determine the animals in their area.

The positive outcomes were three-fold. The high school students reviewed important concepts and developed valuable leadership skills. The fourth-grade students used critical thinking and problem-solving skills to delve deeper into their environment with the ultimate goal of becoming better stewards of their environment. The high school students, fourth graders, teachers and community partners came together for two days to work and learn together about their environment and how what they do affects it.

Many of the materials which were used to support the were purchased with VAST mini-grant funding! Applying for mini grants for innovative curriculum activities which expand learning opportunities for science students is a benefit of VAST Membership.



Students collecting macroinvertebrates to determine the health of the creek.



Community partners present an enviroscape model.



Students learn about the food webs involved in the creek they were studying.



Biocubes were placed along the creek to collect observational data of biotic and abiotic factors.

Read more about VAST minigrants on [page 16](#).



Using Data During Content Theme Study to Engage Students

By LoriAnn Pawlik, BS Physics, MS Ed., PAEMST 2018, VAST Region IV



“Tracking Water Using NASA Satellite Data”

NASA/JPL Edu | jpl.nasa.gov/edu

Students graph real data from the GRACE mission. Credit: LoriAnn Pawlik

There are many different types of teachers. Some of these include those who like to follow a set curriculum, those who like to use materials that other teachers use, and those who use a combination of both formats. Then, there are those who enjoy finding materials that just enhance a lesson to be taught. In this brief, I would like to reveal one way that I did just that.

It was during a year that I was a STEM teacher for grades K-5. My theme for the year was centered around water. There is so much that can be learned across all content areas and age levels with this particular focus. At this point in the year, we had been studying oceans and I wanted to find a way to bring some extra excitement to our learning. My kindergartners and first graders were designing and creating paint brushes during a Project Lead the Way unit. They were using these to paint watercolor blue over previously drawn sea creatures. My second graders were devising ways for people to colonize and live on Mars – with creative designs and thoughts for food and water. As an aside, these were extremely fascinating and forward-thinking as each student presented their plan. Third graders used library books to research and present on sea life. Fourth

graders were tracking turtles as they searched for food, discussing their life cycles, understanding the impact of humans, and researching characteristics necessary for turtle survival. And then, there was fifth grade. Anyone who has taught fifth graders know that they can be a challenge to keep engaged. How does one engage them and guide them toward reaching their Standard of Learning goals?

During this time, I happened to be taking an online astronomy course led by a NASA JPL Education Specialist in California. Part of my research was to find a topic to explain to my classmates. I settled on finding some satellite to bring the info to life for my fellow teachers. Researching several, I came across one that tracked water mass movement around the world. WATER?! BINGO – that was the one about which I wanted to learn more. The Gravity Recovery and Climate Experiment (GRACE*) satellite circles the Earth sixteen times each day in a tandem satellite format. It maps all forms of water such as glacial ice, deep reservoirs, rivers, etc. I looked deeper into that program and was able to find maps of monthly data over a period of years. While I worked on my research for class, an idea was percolating in the back of my mind.

What if I used these data maps – colored heat maps of the United States – for my students’ study? I printed off six sets of monthly maps for different years for my six table groups. Next, I analyzed them to figure out which ones were geographically in a variety of regions across the U.S. and had movement that would be interesting to students. I ended up selecting Maine, Virginia, Florida, Alabama, Texas, & California. My intent was to have the students at the table focus on a particular state and divide up the twelve months between them. They would use the map gauge to determine the water mass value during their selected month. Collaboratively, students would then plot the data on a graph and analyze the data. Could they explain the water movement? Presentation is an important part of my lab in building communication skills, and I planned for each table group to explain their analysis of their state’s water movement to the entire class. Finally, at the end of the assignment, each group would plot all the states on a “master” data plot for the year and hang it in the hallway to share with others.

With plan in place and graph paper at the ready, I eagerly entered class. I played it cool by continuing with our regular lesson and then at the end of that day, I told my students that I had a question for them. I told them that I had been asked if my students would like to be Junior NASA Scientists to help them plot the data for a particular NASA satellite. Of course, they were enthusiastic! I went into the history and design of the GRACE satellite, showed a short video, and pulled up some data on the Smartboard. I could feel the excitement building but told them that

I wanted their thoughts before I said, “Yes!” The next day, we began.

The project was extremely successful. I have pictures, video, and audio of an extremely busy, noisy, engaged classroom- it was awesome! In fact, I submitted my lesson and pictures to my astronomy teacher, and it became the first ‘Teacher Feature’ on the NASA JPL website. I used this project with fifth graders, but it can be used by older students as well. My goal of keeping my students engaged was met and furthered my desire to strive to become that teacher who looks for those unusual opportunities to fuel that desire in students to learn more through real-world data.

*GRACE satellite is now the GRACE-FO

[GRACE-Follow On](#)

[Link to the article](#)

[Link to the lesson](#)

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VAST Region IV News

Lori Pawlik

Our region encompasses Shenandoah to the west, Orange to the south, Prince William to the east, and Winchester/Loudoun to the north. Please check out our new website link under “About” on the VAST website. There are ideas of places to go to study ‘science’ in our region. If you have any news to share, please do get in touch with me.

May 21st – Ice Cream Get-Together, Moo-Thru, 11402 James Madison Hwy, Remington, VA. Let’s celebrate the end of a real school year and reward ourselves with a treat!

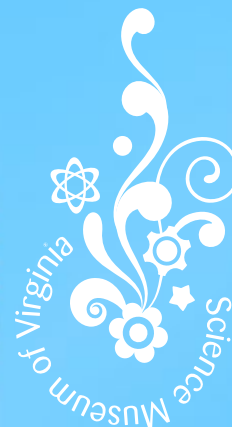
Email Lori for the time, pawlikla@pwcs.edu

<https://gracefo.jpl.nasa.gov>

FIELD TRIPS ARE BACK!

Nothing is better than the sights and sounds of young minds discovering the awesome science all around them! From dissections to engineering challenges, there is something for curious minds of all ages at the Science Museum of Virginia. If you're looking for a scientific adventure, but are unable to visit us in-person, we also offer a wide variety of Digital Demos.

Learn more at smv.org/groups



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

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