



**VAST's Vision:**  
**Excellence in Science Education**  
**Through Innovation**

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[VAST.Org](http://VAST.Org)

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

# The Science Educator

Fall 2023

A Publication of VAST, The Virginia Association of Science Teachers

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## Looking for Ways to Solve the Financial Challenge of Attending VAST

In an ever-evolving world, science teachers play a pivotal role in shaping the future by inspiring the next generation of scientists, innovators, and problem-solvers. To ensure that science teachers remain at the forefront of their field and are equipped with the latest knowledge and teaching methodologies, it is crucial for them to attend professional development events like science conferences. The Virginia Association of Science Teachers (VAST) recognizes the importance of continuous learning and is dedicated to supporting its members in their professional growth. In this article, we explore ways to fund science teachers attending VAST, the significance of teacher funding for attending science conferences, and highlight how VAST's Professional Development Institute (PDI) is leading the way in empowering Virginia's science educators.

### The Importance of Science Conferences

Science conferences are dynamic platforms that bring together educators, researchers, and experts from various fields. The VAST PDI offers numerous benefits for educators, including:

1. **Up-to-date Knowledge:** Conferences provide access to the latest research, innovations, and trends in science education. Teachers can learn about emerging technologies and teaching strategies, ensuring their classrooms remain relevant and engaging.
2. **Networking Opportunities:** Educators can connect with peers, mentors, and professionals in the field, fostering collaborations and partnerships that can enhance their teaching practices.
3. **Professional Growth:** Attending conferences allows teachers to expand their horizons, gain new perspectives, and develop professionally. They return to their classrooms with renewed enthusiasm and fresh ideas.
4. **Inspiration:** Interacting with passionate individuals who share a common love for science can rekindle teachers' passion for their subject matter, which they can then impart to their students.
5. **Resource Acquisition:** Many conferences feature exhibitions where teachers can discover new teaching materials, textbooks, and resources for their classrooms.

### How to Solve the Financial Challenge

Despite the undeniable benefits of science conferences, one significant obstacle for many educators is the cost associated with attendance. Registration fees, travel expenses,

accommodation, and other incidental costs can quickly add up, making it challenging for teachers to participate in these valuable events. Teachers can seek funding from a variety of sources through their school or school division. Here are a few ideas:

1. Each school division has **Title II, Part A funding**. This federal funding source provides funding specifically for professional growth for teachers and administrators. All school divisions have a person in your division's central office responsible for ensuring teachers have funding for conferences and other professional learning opportunities. You can either search your school division website or the [Virginia Department of Education's school division directory](#) to find the person in your school division.
2. Many school divisions have a fund for reimbursing teachers for **tuition reimbursement**. School divisions often set aside a certain amount for each teacher. Some school divisions allow teachers to use this funding to support travel to conferences such as the VAST PDI. You can check with your Human Resources Department to determine if your school division has this available and how you can help access it.
3. **Schools may have funding** to provide registration and travel expenses to conferences. You may consider asking your Principal if they have funding to support this opportunity for you. You can bring back what you learn at the VAST PDI and share it with your colleagues. This often makes a difference in whether a Principal will support this travel experience.

Science teachers are the cornerstone of our society's scientific literacy, and their professional development is paramount. Attending science conferences is a vital aspect of their growth, enabling them to remain at the forefront of science education. The Virginia Association of Science Teachers' Professional Development Institute plays a crucial role in supporting Virginia's educators by offering financial assistance and ensuring that the state's science classrooms are enriched with the latest knowledge and teaching techniques. Through PDI's initiatives, VAST empowers its members to continue inspiring future scientists and innovators, fostering a brighter future for Virginia and beyond.

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Eric Rhoades is a VAST lifetime member and VAST board member. Eric has served as a middle and high school teacher, district science specialist, and Director for Science and Health Education with the Virginia Department of Education.

## Change Happens —



Susan Booth

Well, it has been interesting coming back in person for the VASTPDI Year TWO!!! Hotels filled. The Meeting Schedule consists of pre-events followed by presentations and most of all exhibits. We are thankful for our presenters, attendees, and sponsors. We hope you will all join us for the special ticketed events. With all of this happening we are eager to see the outcome of the meeting and what VAST will transition to over the next few years. Regardless, it will be wonderful to see old friends, colleagues and form new friendships. Sharing experiences and engaging in new ones. So here goes to consistency and enjoying networking, team building and workable lessons. Let the countdown begin.

*Susan Booth*

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

### Are you registering for meals at the PDI?



Click on the link below to view the menus for the continental breakfasts Friday and Saturday, and the ticketed Friday lunch buffet, ticketed Friday dinner, and the ticketed Saturday boxed lunch.

[Link to PDI Menu](#)



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Stephanie Harry,  
VAST President 2023

## Happy Fall Everyone,

It has been a couple of months since the new school year began. I am hoping you are having a great start. VAST PDI committee has been working diligently to prepare for the 2023 PDI which will be taking place next month. I hope you are registered to attend this year. If not it is not too late to be a part of this great event. The 2023 VAST professional development institute will take place November 16 – 18 at the Hotel Roanoke in Roanoke, Virginia.

The theme for this PDI is “Science Teachers Leading from the Classroom.” This educational conference has been planned to give you the tools and resources needed to help you achieve your goals as you work to be a science education leader both inside and outside your classroom. I look forward to meeting you at the conference.

Again, it is not too late to register please visit [vast.wildapricot.org](http://vast.wildapricot.org), visit the PDI page and complete the registration for this conference. Take care and I will see you in Roanoke.

Take care and I look forward to seeing you next month.

Sincerely,

*Stephanie Harry,*

Chemistry Teacher, Tabb High School  
President, Virginia Association of Science Teachers  
Adjunct Professor, Virginia Peninsula Community College  
Program Coordinator, ACS Hach Mentoring Program  
NBCT, AYA Science

### PDI Registration

Online Registration closes October 31, 2023

After October 31, register on site at the PDI

# Virginia Association of Science Teachers 2023 Professional Development Institute Schedule At a Glance

(draft as of 06-21-2023)



## Wednesday November 15, 2023

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

## Thursday November 16, 2023

**Ticketed Donna Sterling Institute** (separate registration from the PDI)

**Title: “Create the Future: Using Engineering Problem-based Learning to Solve Transportation Challenges”**

7:30 AM Continental Breakfast and Check in (Washington Lecture Hall)

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**

**#1: Connecting Classrooms and Communities**

Sponsored by the Science Museum of Western Virginia

**#2: Engaging Students Through Phenomena-based Instruction**

Sponsored by hand2mind

**#3: Introduction to Small Uncrewed Aircraft Systems (sUAS, or Drones)**

Sponsored by the Virginia Space Grant Consortium

2:30 PM – 5:00 PM

**Pre-Conference Ticketed Field Experiences**

**#1: Mill Mountain Theatre – Science in Live Theatre**

**#2: Roanoke Pinball Museum – Physics and Engineering in the Pinball Machines**

6:00 PM – 7:15 PM

**Welcome to the PDI, General Session I** (Roanoke Ballroom AB)

**Speaker: Joshua Whitlinger, sponsored by Five Ponds Press**

**Title: “Imbedding Social and Emotional Learning into Everyday Lessons”**

(Door prize giveaway- must be present to win)

7:30 PM – 9:00 PM

**Night with the Exhibitors** (Roanoke Ballroom C-H)

**Sponsored by WorldStrides**

## Friday November 17, 2023

7:15 AM – 5:00 PM

Registration Desk Open

7:30 AM- 8:30 AM

Continental Breakfast in the Exhibit Hall

7:30 AM – 10:30 AM

**Exhibit Hall Open** (Roanoke Ballroom C-H)

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** (Roanoke Ballroom AB)

**Speaker: Dr. Bethany Brookshire**

**Title: “Don’t Dumb it Down: Science Communication and Journalism”**

(Door prize giveaway; must be present to win.)

Noon – 1:00 PM

Ticketed Lunch (Shenandoah)

2:00 PM – 5:45 PM

Exhibit Hall Open

## Schedule At a Glance continued

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
5:30 PM - 6:45 PM	Celebration Ticketed Dinner (Awardees will be recognized.) (Roanoke Ballroom AB)
7:00 PM - 9:00 PM	Science Museum of Western Virginia Viewing Party, Social, D.J., Higher Ed Throughout the Regions. ( 1 Market Square, SE)

### Saturday November 18, 2023

7:30 AM – 10:30 AM	Registration Desk Open
7:30 AM - 8:30 AM	Continental Breakfast in the Exhibit Hall
7:30 AM - 9:30 AM	Exhibit Hall Open (exhibitor giveaways)
9:45 AM – 10:35 AM	Concurrent Session 7 Breakout Presentations
10:50 AM – 11:40 AM	Concurrent Session 8 Breakout Presentations
11:55 AM -12:45 PM	Concurrent Session 9 Breakout Presentations
12:45 PM – 1:00 PM	Pickup Ticketed Box Lunch to eat during General Session III
1:00 PM – 2:15 PM	<b>General Session III, Meet Your VAST Officers</b> (Roanoke Ballroom AB) <b>Speaker: Laura Akesson, Sponsored by Virginia Space Grant Consortium</b> (VSGC) <b>Title: “Teachers are the Spark”</b> (Extra-Special Door Prizes Giveaway; must be present to win)

## PDI Item SWAP

This year at the PDI there will not be an Auction at the PDI. Instead there will be a SWAP TABLE at the VAST booth. If you have items that you would like to donate, drop them off at the SWAP TABLE and take an item if you see something you can use. It is important to follow the following rules.

### A FEW RULES TO FOLLOW FOR THE SWAP

- First, and foremost is safety – if the item is not safe to use, consider disposing of this item another way. Please don't donate such items. On the other hand, if an item is broken and could be repaired or is useful for parts, tag it as such.
- Second, don't bring chemicals to the SWAP TABLE. There are just too many safety and storage issues, and besides, passing off a problem to someone else just isn't nice!
- Third, you need to make sure that if you are taking a “Swap”, you intend to use it in the teaching of science and are not selling it at your next yard sale.
- And Fourth, is permission, make sure that any item you donate is yours to donate OR that you have permission to donate the item for our SWAP TABLE.
- Finally, you need to make sure that anything you swap for you can carry away. We don't deliver and we don't store, so if you take it, you're taking it that evening! Do not leave it behind. If you do not want it, give it to someone else.



## Three General Session Speakers at the PDI

**Joshua Whitlinger**, the 2023 Virginia Beach Public Schools, Teacher of the Year and a National Geographic Certified Educator. He teaches Earth Science and Physical Science to the gifted and talented. General Session I,



Thursday 6:00pm,  
“Imbedding Social and Emotional Learning into Everyday Lessons”

**Dr. Bethany Brookshire** is an award-winning freelance science journalist and author of the critically acclaimed 2022 book *Pests: How Humans Create Animal Villains*. She will discuss what science communication is, what science journalism is, and how breaking them down and understanding what they are, can help students read more critically and better navigate the science that makes the world run. General Session II, Friday 10:40 am,  
“Don’t dumb it Down: Science Communication and Journalism”



**Laura Akesson** of Richmond, Virginia has taught Physics, Math, and Biomedical Engineering/Design for the past 22 years. “When was the last time you thought of teaching and a classroom as naturally stable and low energy? Never. You are the pushers, the pullers, the cheerleaders, the creatives, the spark that ignites curiosity, motivation, wonder, and learning. This spark, and how we defy science and generate it, is the key to who we are and how we can light it up for our students... AND lead the way for our colleagues and communities.” General Session III, Saturday 1:00pm, “Teachers are the Spark”



[Click for more information about speakers.](#)

## VDOE Endorses VAST



### COMMONWEALTH of VIRGINIA

#### 2023 Virginia Association of Science Teachers Professional Development Institute

Anne M Petersen, Ph.D.,  
Science Coordinator Office of STEM  
and Innovation

Myra Thayer and Gregory MacDougall,  
Science Specialists Office of STEM and  
Innovation

The Virginia Association of Science Teachers (VAST) and the Virginia Department of Education are pleased to announce the 2022 VAST Professional Development Institute (PDI), “Science Teachers Leading from the Science Classroom”, to be held November 16-18, 2023, at the Hotel Roanoke and Conference Center in Roanoke, Virginia. The VAST PDI is a forum for science educators and administrators to network with fellow science teachers, gain new instructional strategies and lesson ideas, enhance science content knowledge, and experience cutting-edge technology. This year’s VAST PDI will offer over 200 concurrent sessions intended to support the Virginia Science Standards of Learning as well as Virginia Department of Education initiatives. In addition, presentations will be conducted by nationally recognized keynote speakers.

The Donna Sterling Institute, held in conjunction with the VAST PDI, is an additional opportunity for teachers

and leaders to engage with targeted, in-depth professional learning. This year’s Donna Sterling Institute is “Create the Future: Using Engineering Problem-based Learning to Solve Transportation Challenges”. This all-day learning opportunity will be held at the same site as VAST on November 16, 2023.

VAST, a professional association with over 2000 members, advocates for high-quality science instruction for all students. The VAST PDI is designed to provide sessions for educators and administrators in all science content areas and at all grade levels. The PDI also provides an avenue for communication among all members of the science teaching community.

We encourage science educators and administrators to take the opportunity to include VAST PDI as part of their professional development plan. The VAST PDI provides educators an engaging opportunity to earn re-certification points while learning strategies to be used in the classroom.

For more information regarding the Virginia Association of Science Teachers or the annual PDI, please visit [www.vast.org](http://www.vast.org) or contact Susan Booth, Executive Director at [susan.science@gmail.com](mailto:susan.science@gmail.com).

# Hotel Registrations for the PDI

## 2023 PDI

The Hotel Roanoke & Conference  
110 Shenandoah Avenue, Roanoke, VA 24016

PDI November 16-18 2023

The VAST reservation website:

<https://book.passkey.com/event/50478556/owner/9515698/home>

The guest room rate is \$139.00 plus 13.3% tax per night. With taxes, the rate is \$157.49 per night.



## Internet and WiFi Information

If you are an overnight guest at the Hotel Roanoke, wireless internet is complimentary throughout the hotel and conference center. The username and password are the guests last name and room number. For guests who are not overnight guests staying at the hotel and who are just coming in for the day, there is a \$9.95 per day charge for internet/wifi...these guests can pay for the internet through the hotel splash page when they try to access the internet.

We do have options for free internet for the day guests. In the main lobby, we do have free wireless internet access. We also have two business center locations that have computers for people to use.

## Parking Options

Hotel Roanoke Parking Lot Valet parking: \$21.00

Self-Parking: \$15.00

Closest City Parking Garages to the Hotel Roanoke (hourly or day rates)

Gainsboro Garage - 25 Shenandoah Ave (two blocks from Hotel Roanoke)

Tower Garage - 11 N. Jefferson St. (across the walking bridge from Hotel Roanoke to Downtown)

On-Street Parking Be sure to follow all posted signs regarding parking restrictions.

## Update:

There are still rooms available at the Hotel Roanoke. If you are interested and cannot get a room then send to Susan Booth [susan.science@gmail.com](mailto:susan.science@gmail.com) your name, email and phone number and the arrival and departure dates. Please make other arrangements until they can possibly assist you if rooms become available that meet your needs.



### 1. Econo Lodge-Civic Center

308 Orange Ave, NE

(540) 343-2413

\$84-\$89 plus taxes

Rates may change closer to dates.

### 2. Holiday Inn Express and Suites-Roanoke

1303 Williamson Rd, NE

(540) 900-2312

Rates change closer to dates \$130-\$181 plus taxes.

### 3. The Liberty Trust

101 S Jefferson Street

(540) 295-5100

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

Rates change closer to dates \$172-\$230 plus taxes.



## **Thursday Afternoon Ticketed Workshops Virginia Association of Science Teachers 2023 Professional Development Institute**

**All Workshops 3:15 PM – 5:00 PM**

**Cost for each workshop is \$10.00.**

**Register online (<https://vast.wildapricot.org/2023pdi>) for one of the workshops by October 31. None can be purchased on site at the hotel.**

### **Workshop #1: Connecting Classrooms and Communities**

**Presenters:** Danielle Murray, Katherine Brooks and Ivy Phillips of Science Museum of West Virginia Sponsored by the Science Museum of Western Virginia

**Grade Level:** K-12

**Description:** This workshop will show how educators working with K-12 students can utilize resources in their communities to supplement their classroom experiences from 3:15-4:15. Followed by a teacher field trip to the museum where we showcase the outreaches and field trip offerings to the attendees from 4:15 to 5:00-closing.

### **Workshop #2: Engaging Students Through Phenomena-based Instruction**

**Presenters:** Pam Caffery, National Solutions Sales Consultant, hand2mind Sponsored by hand2mind

**Grade Level:** Elementary

**Description:** Come explore how everyday phenomena can be leveraged to engage students in meaningful scientific investigations, collect authentic data, and develop appropriate scientific models and explanations. Participants will investigate a wide range of everyday phenomena while gleaning turnkey strategies for a successful 5E learning experience.

### **Workshop #3: Introduction to Small Uncrewed Aircraft Systems (sUAS, or Drones)**

**Presenters:** Kristen Duprey, STEM Education Specialist, Virginia Space Grant Consortium Kari Espada, STEM Education Specialist, Virginia Space Grant Consortium  
Sponsored by the **Virginia Space Grant Consortium**

**Grade Level:** High School

**Description:** Virginia Space Grant Consortium (VSGC) coordinates and leads a variety of precollege and higher education programs that pipeline students into STEM majors and careers. This workshop will give teachers an introduction to small uncrewed aircraft systems (UAS, or Drones). Hands-on training and resources for integrating UAS into the classroom will be provided. Instructors will also provide information about careers in UAS and how they are used in the workplace. The primary target audience is high school teachers with little knowledge of UAS.

An overview of various UAS applications, an introduction to UAS and physics of flight, flight planning and operations, coding with drones, and hands-on flying of drones will be provided. Teachers will leave this workshop with a better understanding of UAS applications, vehicle and sensor selection, safe flying practices, how to obtain controlled airspace flight authorizations, coding with drones, and classroom-ready instructional resources to be used in the science classroom. Teachers will also hear about the availability of additional training, courses, certification programs, and dual-enrollment and distance learning opportunities available through Virginia's community colleges.

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**Link to Hotel Map:**

<https://vast.wildapricot.org/resources/Documents/hotel%20floorplan.pdf>





## **Virginia Association of Science Teachers 2023 Professional Development Institute Thursday afternoon Ticketed Field Experiences 2:30 PM – 5:00 PM**

**Meet at the VAST Registration Desk in the Hotel Roanoke at 2:30 PM for the short walk to the Museum and Theatre.**

**Cost for each field trip is \$15.00.**

**Thursday field trips must be purchased by October 31.**

**None can be purchased on site at the hotel.**

**Register online (<https://vast.wildapricot.org/2023pdi>) for one of the field trips by October 31.**

### **Field Trip #1: Mill Mountain Theatre**

Come and explore the role of science in live theatre. We will be visiting the Mill Mountain Theatre, a professional theatre company. Learn how they build sets and prepare for their upcoming holiday show. From the simple machines used to move the sets to the intricacies of sound, lighting and costuming, learn the role of science in the magic of theatre.

### **Field Trip #2: Roanoke Pinball Museum**

Come and learn about the physics and engineering of pinball machines- from the classics to modern day. After the guided learning experience, enjoy free play on over 50 pinball machines! Check it out at:

[www.roanokepinball.org](http://www.roanokepinball.org).

## **JVSE Update - October 2023**

**Written by Dr. Angela Webb & Dr. Joi Merritt, JVSE Co-Editors**

Curious about writing or reviewing for the Journal of Virginia Science Education? We hope you'll join our VAST PDI session titled, Get Involved with the Journal of Virginia Science Education! Our session will acquaint attendees with JVSE, answer questions about being published in JVSE, and provide an overview of the review process.

Wanting to become more involved with VAST and JVSE? We invite all VAST members to volunteer to review submitted manuscripts. This opportunity is a service you can include on your resume and is a great way to get ideas for your own publications. If you're interested in serving as a JVSE reviewer, please scan the QR code and respond to a brief set of questions to (a) indicate your interest in reviewing 1-2 manuscripts this year, (b) update your contact information, and (c) share your areas of expertise and your professional interests.

**SCAN ME**



Please visit the journal webpage to read current and past issues of JVSE, learn more about the issue themes for 2023, and review guidelines for manuscript authors and reviewers.

# PDI Exhibitors 2023

## Exhibit Hall Schedule - ROANOKE BALLROOM C-H



Thursday, Nov 16	7:30 PM – 9:00 PM	Night with the Exhibitors Sponsored by WorldStrides
Friday, Nov 17	7:30 AM – 10:30 AM	Exhibit Hall Open
	2:00 PM – 5:45 PM	Exhibit Hall Open
Saturday, Nov 11-18	7:30 AM - 9:30 AM	Exhibit Hall Open (exhibitor giveaways)

3D Molecular Design

Accelerate Learning

American College of Education (ACE)

Busch Gardens Williamsburg

Cengage

Center for the Advancement of Sustainable Energy  
at JMU

Chesapeake Bay Foundation (CBF)

Chesapeake Bay National Estuarine Research  
Reserve

CodeVA

Colonial Williamsburg Foundation (CWF)

Dan River Basin Association

Data Classroom

Discovery Education

Eastern Mennonite University (EMU)

ExploreLearning

Five Ponds Press

hand2mind

Inquisitive

James River Association

Legends of Learning

mheducation

miniPCR

microscope solutions

Old Dominion University

PITSCO

Project NEED

SAVVAS

School Specialty LLC

Science Museum of Virginia (SMV)

Science Museum of Western Virginia (SMWV)

Strawbees

Texas Instruments (TI)

Vernier

Virginia Agriculture in the Classroom (VAFB)

Virginia Association of Science Teachers (VAST)

Virginia Department of Aviation (DOAV)

Virginia Department of Energy (Virginia Energy)

Virginia Department of Forestry (DOF)

Virginia Department of Wildlife Resources (DWR)

Virginia Institute of Marine Science (VIMS)

Virginia Junior Academy of Science (VJAS)

Virginia Lottery

Virginia Space Grant Consortium (VSGC)

Virginia Tech College of Natural Resources and  
Environment

Virginia Tech College of Science

Virtual Science Teachers

WHRO

WorldStrides



# Nominees for the Board of Directors

As a VAST member, you are entitled to vote for VAST officers and Regional Directors. Below are brief descriptions of each nominee and their respective board position.

Voting ends **November 2, 2023**.

Election results will be announced at the 2023 PDI in Roanoke. Board terms begin January 1, 2024.

Step one: login to your account on the [vast.wildapricot.org](https://vast.wildapricot.org) website

Step two: click on the green “Go to poll page” button below.

**[CLICK to go to the digital ballot](#)**

## Region 1 - Amber Rhodes

Amber is an Innovative Learning Coach who helps educators incorporate new technologies and tools to support meaningful science instruction. For four years prior, she served as the lead Physical Science curriculum writer in Henrico County, developing curriculum, pacing, and assessments. She regularly leads professional learning, attends national science conferences, and coaches educators across her district. Following her first year in the classroom, she was recognized for her high organizational leadership skills and asked to serve as the Science Department Chair. As Department Chair at a recently reconstituted school, she was fortunate to frequently work directly with representatives from the Department of Education in lesson planning and school quality. At the end of her second year there, she was honored with the award of “Most Creative” by the administration for her innovative approach to curriculum and instruction.

She is excited about the opportunity to help further science education through this role with VAST.

## Region 3 - Margaret Greene

Margaret is the current Director for Region 3, wishing to continue working with educators in this region. She has been involved with VAST, VIP (Virginia Instructors of Physics), VESTA (Virginia Earth Science Teachers Association, where she was VP and worked on developing the constitution), and VTCM. She is also active with the Middle Peninsula Master Naturalists, where she is active with the Basic Training Committee and citizen science activities.

## Region 5 - Dr. Robbie Higdon

Robbie has served as VAST's Region V director/co-director since 2020. She has been an active member of VAST since Fall 2014 and presented every year at the PDI. She also serves as a reviewer for The Journal of Virginia Science Education. In addition, She is an active member of NSTA and currently serves on the Coordination and

Supervision committee. She has previously served on the NSTA Nominations Committee and the NSTA Pre-Service Preparation Teacher Committee. She also serves on the manuscript review panel for Science Scope, the NSTA journal for middle grades educators. She has been presenting at NSTA regional and national conferences since 2004. Robbie is also a member of ASTE and has been presenting at this group's regional and annual meetings since 2010. She has authored articles for the Journal of Virginia Science Education, Science Scope, and the VASCD journal.

## Region 7 - Jinx Rasmussen

Jinx has been a classroom teacher for 28 years in three different states. She has been a member of VAST since teaching in Virginia and a member of NSTA, NABT her entire teaching career. Jinx is an active member of VSELA and works on the program committee. She has been the co-director of Region 7 for the past two years and would like to be on the ballot for the next term. Jinx has received several awards over the past years, which include four NEED teacher awards, Teacher of the Year for Brighton High School in Brighton, Tennessee, and the RISE award for middle school teaching.

She looks forward to serving on the VAST board.

## President-Elect - Eric Rhoades

Throughout his career, Eric has actively engaged in science leadership roles at the district and state levels. He currently serves on the VAST Board as the Advocacy Chair Committee. He has led strategic initiatives, fostered collaboration among members and organizations, and ensured the focus on science education. Eric's passion for science education has also led him to participate in other science-related organizations, broadening his perspective and enabling him to contribute effectively to the science education community. He is also a member of VSELA, NSTA, NSELA, CSSS, NCSTA, and the VMSC. Eric has served as the president of VSELA and the VMSC and

received honors from NOAA and the Chesapeake Bay Commission for his contributions to environmental education. He has authored a variety of publications and presentations, including the Science Education in Virginia in the Journal of Mathematics and Science. Eric would be honored to be considered to serve as the president-elect of VAST. As a life member, Eric has a high regard for the VAST mission and would focus on supporting the growth of VAST in the coming years.

#### **Treasurer - Dr. Paula Klonowski Leach**

Paula has served on the VAST Board in varying capacities off and on since 2003, first as a representative from VDOE in her role as Science Specialist and Coordinator. She then served as the Chair of the Technology Committee until 2018 and has been back in that role since 2022. Paula also serves on the Board of the Virginia Math Science Coalition

(VMSC) and the Virginia Society in Technology Education (VSTE). She is also a member of the Virginia Science in Education Leadership Association (VSELA) and an associate member of the Council for Science Supervisors (CSSS). As Director of the Institute for Teaching through Technology and Innovative Practices (ITTIP) at Longwood University, she oversees STEM initiatives for PK-12 outreach education. Much of this work depends on grant funding, and Paula has served as PI or CO-PI on 15 projects since 2011, which has involved managing all aspects of the project, including budgets. She routinely works with school districts in the rural Southside portion of Virginia, providing STEM professional development and programs to K-12 teachers and students. She has over 14 science-related publications to date since 2003.



## **PAEMST Applications are Open**

Nominate a science, technology, engineering, or mathematics teacher working in grades K-6 by January 8, 2024. Applications for the Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST) must be completed by **February 6, 2024**. If you have questions about applying, PAEMST is offering webinar information sessions.

PAEMST is celebrating 40 years of honoring STEM teachers!

### **2023 PDI Registration**



**Presenter - \$155**

**Attendees:**

**\$195 Earlybird**  
**\$240 Regular Registration**  
**\$115 Full Time Student**  
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**\$145 Full Time Student**  
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**Forms and**  
**Registration**



# VIRGINIA ASSOCIATION OF SCIENCE TEACHERS 2023 PROFESSIONAL DEVELOPMENT INSTITUTE CONCURRENT SESSION PRESENTATIONS

(Draft as of October 1)

Presentation list including the days, times, and locations can be found at  
<https://vast.wildapricot.org/2023pdi>, the WHOVA App, and the PDI printed program.

## **Differentiating Student Choice**

Grade: MS, Content: Physics/Physical Science  
Rachel Alldaffer, Prince William County Public Schools

## **Inclusivity Fostered with STEAM-Infused Instruction**

Grade: ELEM, Content: Infusing STEM & the Arts  
Susan Bardenhagen, Prince William County Schools

## **The Autoclave: A Versatile Tool in High School Science**

Grade: HS, Content: General  
Timothy Bill, Harrisonburg High School

## **Accessible Gel Electrophoresis for Middle & High School Biology**

Grade: MS-HS, Content: Biology/Life Science  
Marc Bliss, miniPCR bioogy  
Commercial Exhibitor

## **Design an Experiment for the International Space Station!**

Grade: MS-HS, Content: Biology/Life Science  
Marc Bliss, miniPCR biology

## **Re-envisioning Science for Students with Visual Impairment**

Grade: MS-HS-COL, Content: Adaptive STEM  
Dylan Boeckmann, The Virginia School for the Deaf and the Blind  
Kerry Cresawn, James Madison University

## **How to Slay Every Science Lesson**

Grade: MS-HS, Content: General  
Kristen Boudreau, Prospect Heights Middle School

## **Developing the Mind of an Experimentalist**

Grade: ALL GRADES, Content: STEM  
Arthur Bowman, Norfolk State University

## **Culturally Responsive Teaching for STEM Instruction**

Grade: ALL GRADES, Content: STEM  
Arthur Bowman, Norfolk State University  
Kiana Thomas, Norfolk State University

## **Science & Diverse Learners**

Grade: MS-HS, Content: Earth/Space Science, General  
Andrea Bryant, Lucille Brown Middle School

## **Tuskless Elephants? Engaging Students In Science Practices**

Grade: MS-HS, Content: Biology/Life Science, Environmental Science  
Bernice Brythorne, Monticello High School

## **Bringing Science to Life**

Grade: ELEM, Content: General Science  
Meryl Butler, Henrico County Public Schools  
Rebecca Fischer, Laburnum Elementary School

## **VCU: The Role of Bivalves in Sustaining Watershed Ecosystems**

Grade: MS-HS, Content: Earth/Space Science, Biology/Life Science, Environmental Science  
Al Byers, VCU School of Education: Center for Innovation in STEM Education  
Sue Kirk, VCU School of Education  
Elizabeth Edmondson, VCU School of Education

## **VCU: Role Play Experiences Sustaining Watershed Ecosystems**

Grade: MS-HS, Content: Earth/Space Science, Biology/Life Science, Environmental Science  
Al Byers, VCU School of Education: Center for Innovation in STEM Education  
Sue Kirk, VCU School of Education  
Elizabeth Edmondson, VCU School of Education

## **Bridge DATA - Bay Nettles: What are the Chances?**

Grade: MS-HS, Content: Biology/Life Science  
Celia Cackowski, Virginia Institute of Marine Science, Marine Advisory Program (VIMS MAP)  
Not-for-Profit Exhibitor

## **Bye-Bye, Bycatch and Hello Terrapin Town!**

Grade: MS, Content: Biology/Life Science, Environmental Science, STEM  
Celia Cackowski, Virginia Institute of Marine Science, Marine Advisory Program (VIMS MAP)  
Anna Caputo, Chesapeake Bay National Estuarine Research Reserve in Virginia (CBNERR-VA)  
Not-for-Profit Exhibitor



**Integrating Coding Skills with Screen-free STEM Activities**

Grade: ELEM-MS, Content: STEM

Pam Caffery, hand2mind

Commercial Exhibitor

**Building Vocabulary and Sense-making with Makerspace Tasks**

Grade: ELEM, Content: General, STEM

Pam Caffery, hand2mind

Commercial Exhibitor

**Phenomenal Hands-On Kits Session**

Grade: ELEM-MS, Content: Math in Science, General, STEM

Pam Caffery, hand2mind

Commercial Exhibitor

**Methods for Fostering Dialogue in the Science Classroom**

Grade: ALL GRADES, Content: General

Ben Campbell, Longwood University

Erich Sneller, Harrisonburg High School

**Bonding the Beauty of Science and Best of Computer Science**

Grade: ELEM, Content: Computer Science Integration

Jessa Campbell, Albemarle County Public Schools

Sandy Shaffer, Albemarle County Public Schools

Katie Breaud, Albemarle County Public Schools

**Exploring Climate Change Solutions in the Classroom**

Grade: HS-COL, Content: Climate Change Social Impacts

Anna Caputo, CBNERR

**Engaging in Scientific Argumentation in STEM**

Grade: ELEM-MS, Content: General, STEM

Chelsea Chandler, STEMscopes by Accelerate Learning

Commercial Exhibitor

**Integrating the Arts Into the Science Classroom**

Grade: ALL GRADES, Content: General, STEM

Chelsea Chandler, STEMscopes by Accelerate Learning

Commercial Exhibitor

**Opportunities for MS & HS Students and Teachers at VT**

Grade: MS-HS, Content: Biology/Life Science, Chemistry, STEM

Victoria Corbin, Virginia Tech, College of Science

Sandy Hancock, Fralin Life Sciences Institute, Virginia Tech

**March Mammal Madness: if You're Learning, You're Winning!**

Grade: ALL GRADES, Content: Biology/Life Science

Linda Correll, Fauquier County Public Schools

**Informal K-5 STEM: Let's do More than Spark Interest**

Grade: ELEM, Content: STEM

Kerry Cresawn, James Madison University STEM Center

Julianna DiRocco, James Madison University STEM Center

Luke Scroggham, James Madison University STEM Center

**Physics for All**

Grade: HS, Content: Physics/Physical Science

**Real Science: Science Teachers in Research Labs**

Grade: MS-HS, Content: Biology/Life Science, STEM

Elizabeth Edmondson, Virginia Commonwealth University

**Science and Social Justice**

Grade: MS-HS-COL, Content: STEM

Elizabeth Edmondson, Virginia Commonwealth University

Meredith Kier, College of William and Mary

**Empowering Science Ed: Integrating CS for Engaging Learning**

Grade: MS, Content: Biology/Life Science, STEM

Valerie Fawley, CodeVA

Natalie Rice, CodeVA

Not-for-Profit Exhibitor

**Environmental Awareness: Supporting a Path Towards Action**

Grade: ELEM-MS, Content: Environmental Science, General

Stefany Feldbusch, Blandy Experimental Farm

Emily Ford, Blandy Experimental Farm

**Be an A11y Ally: Creating Accessible STEM Classrooms**

Grade: MS-HS, Content: General

Katie Fielding, Prince William County Schools

**STEM Initiatives: A Collaborative Discussion**

Grade: ALL GRADES, Content: STEM

Katie Fielding, Prince William County Schools

Kirsten White, Prince William County Schools

**Building a STEM Learning Ecosystem in Central Virginia**

Grade: ALL GRADES, Content: STEM

John Fife, Virginia Commonwealth University

**Moon Phases and Tides- Teach the Abstract to Concrete Brains**

Grade: ALL GRADES, Content: Earth/Space Science, Physics/Physical Science

Thomas Fitzpatrick, Roanoke City Public Schools

Angelo Bonilla, James Breckinridge Middle School

Leslie Barrett, James Breckinridge Middle School

**Antarctica Today!**

Grade: ALL GRADES, Content: Biology/Life Science Kathy Frame, Papillon Education Services LLC.

**Are you Moody?**

Grade: MS-HS, Content: Physics/Physical Science, STEM Michelle Grooms, Texas Instruments Inc Commercial Exhibitor

**Bring It Together: Elementary Engineering Integration**

Grade: ELEM, Content: Engineering, STEM Kristie Gutierrez, Old Dominion University Jennifer Kidd, Old Dominion University Danielle Rhemer, Old Dominion University

**Marsh Cam Takeover**

Grade: ALL GRADES, Content: Biology/Life Science, Environmental Science, General Courtney Hallacher, Virginia Department of Wildlife Resources Not-for-Profit Exhibitor

**Teaching Beyond the Text: Integrating Arts and Literacy**

Grade: ALL GRADES, Content: Earth/Space Science, Biology/Life Science, General Christina Hannaman, Gayle Middle School- Stafford County Public Schools Alyssa Scrubb, Gayle Middle School - Stafford County Public Schools

**Experiencing Biology Through Interactive Learning**

Grade: HS-COL, Content: Biology/Life Science Patrick Hardner, Turner Ashby High School

**Search for Antibiotic Resistance Genes in Environmental DNA**

Grade: HS-COL, Content: Biology/Life Science Kristen Hennessy-McDonald, miniPCR bio Commercial Exhibitor

**Exploring Mendelian Inheritance with Labradoodle Genetics**

Grade: HS-COL, Content: Biology/Life Science Kristin Hennessy-McDonald, miniPCR bio Commercial Exhibitor

**Gifted Learners in the Science Classroom**

Grade: ALL GRADES, Content: Science Education for All Debra Hicks, Kilgore Gifted Center

**Building the Future of Science Education**

Grade: ALL GRADES, Content: Pre-service and early career Robbie Higdon, VAST Colleges and Universities Chair Elizabeth Edmondson, Virginia Commonwealth University

**Pre-service and Early Career Teacher Ticketed Lunch Meeting**

Grade: ALL GRADES, Content: Pre-service/early career Robbie Higdon, VAST Colleges and Universities Chair

**Colleges and Universities Roundtable**

Grade: ALL GRADES, Content: General Robbie Higdon, VAST Colleges and Universities Chair

**Three Programs to Integrate Environmental Ed in Your Classroom**

Grade: ALL GRADES, Content: Biology/Life Science, Environmental Science Krista Hodges, Dan River Basin Association Regina Flora, Dan River Basin Association

**Cross Circular Connections with Colonial Williamsburg**

Grade: ALL GRADES, Content: Cross-Curricular Connections Rachel Honchul, Colonial Williamsburg Foundation Brandon Lyles, Colonial Williamsburg Foundation Not-for-Profit Exhibitor

**Integrating Low Cost Organic Gardening into High School Science Classes**

Grade: HS, Content: Earth/Space Science, Biology/Life Science Richard Howell, Tabb High School

**School Science Safety - Practical Guidelines**

Grade: ALL GRADES, Content: General Andrew Jackson, Harrisonburg City Schools - retired

**Infusing Environmental Action Civics into Your Curriculum**

Grade: ALL GRADES, Content: Biology/Life Science, Environmental Science, STEM Sarah Jennings, Earth Force Sheri Sharwarko, Jamestown Elementary School

**CVCSI Team- Core Content Plans to Help You Integrate CS**

Grade: ELEM-MS, Content: All K-8 teachers Allison Kappler, Bedford County Public Schools

**Nothing is Random: Weathering, Erosion, Provinces, & The Bay**

Grade: ALL GRADES, Content: Earth/Space Science, Environmental Science Chris Kaznosky, Central High School, Shenandoah County Steve Leslie, James Madison University Geology Department

**A Quick Chemistry Grab Bag**

Grade: HS, Content: Chemistry

James Key, Huguenot High School

**Using a Simulation, PEWI, to Experience Watershed Ecosystems**

Grade: MS-HS, Content: Earth/Space Science, Biology/Life Science, Environmental Science

Suzanne Kirk, Virginia Commonwealth University

Elizabeth Edmondson, Virginia Commonwealth University

Al Byers, Virginia Commonwealth University

**Making Biology Lessons More Active!**

Grade: MS-HS, Content: Biology/Life Science

Julia Kogut, John Handley High School

Marisa George, John Handley High School

Kelly Huynh, John Handley High School

Emilia Guirguis, John Handley High School

**Building Critical Thinkers that are Prepared for the Future**

Grade: ELEM-MS, Content: Biology/Life Science, Environmental Science

Leslie Lausten, School Specialty - FOSS

Commercial Exhibitor

**Getting Started with Anchor Phenomena in FOSS**

Elementary

Grade: ELEM, Content: General

Leslie Lausten, School Specialty - FOSS

Commercial Exhibitor

**Knock Down the Silos: Outdoor Science Learning and Literature**

Grade: ALL GRADES, Content: Science supports language arts

Lillian Ledford, University of Virginia

Emily Ford, University of Virginia

**Introduction to Bioinformatics**

Grade: HS-COL, Content: Biology/Life Science

Mark Levy, Roanoke Valley Governor's School

The Life of a Monarch Butterfly (PBL)

Grade: HS, Content: Environmental Science

Carolene Lewis, Westmorland High School

Paris Hickman, Westmoreland High School

**Regional STEM PD - Cross-pollination Results & Tips**

Grade: ALL GRADES, Content: STEM

Cheryl Lindeman, STEM Consultant

Lani Patrick, Campbell County Public Schools

Allison Kappler, Bedford County Public Schools

**Computer Science for Middle School (CS4MS)**

Grade: MS, Content: STEM

Melani Loney, Old Dominion University

Lisa Steffian, Old Dominion University

**STEAMing into an Improved School Culture**

Grade: ELEM, Content: STEM

Liz Lynch, Patrick Henry Elementary School

Ashley Taylor, Patrick Henry Elementary School

Lizzy Fulcher, Patrick Henry Elementary School

Erica Becker, Patrick Henry Elementary School

**Plan for Learning with the 2018 Science Curriculum Framework**

Grade: ALL GRADES, Content: General

Gregory MacDougall, Virginia Department of Education

Anne Petersen, Virginia Department of Education

Myra Thayer, Virginia Department of Education

**Applying for PAEMST: Highlighting Your Teaching**

Grade: ALL GRADES, Content: General

Gregory MacDougall, Virginia Department of Education

Anne Petersen, Virginia Department of Education

Myra Thayer, Virginia Department of Education

**Debunking Myths about Engineering**

Grade: ELEM-MS, Content: Engineering, STEM

Jennifer Maeng, University of Virginia

Amanda Goncz, Michigan Technological University

**A Catalyst for Independent Learners in a Science Classroom**

Grade: HS-COL, Content: Chemistry, Instructional Practices

Mithra Marcus, Rock Ridge High School

Heather Cox, Rock Ridge High School

**Bottom Up: Introduction of STEM and Navigating Gender Bias**

Grade: ALL GRADES, Content: General, STEM

Lizzy Marples, James Madison University

**How Student-Driven Inquiry Can Address Climate Justice**

Grade: MS-HS-COL, Content: Biology/Life Science, Environmental Science

Sandra Marr, Collegiate School

**Small Steps to Lead with Phenomena**

Grade: ALL GRADES, Content: General

Jason Marshall, McGraw Hill

Commercial Exhibitor

**A Report on Teaching Dual-Enrollment Geology in High School**

Grade: HS, Content: Earth/Space Science, Environmental Science

David Matchen, VAST Earth Science Content Chair

**Coffee Chat with the VAST Content Chairs**

Grade: ALL GRADES, Content: General

David Matchen, VAST Earth Science Content Chair

Tony Wayne, Albemarle High School

Jennifer Sharp, Floyd County High School

Jill Collins, Martinsville City Public Schools

**STEM +1: Stirring Literacy into Your Science Lessons!**

Grade: ELEM, Content: Science Literacy

Jenna Mercury, ExploreLearning

Commercial Exhibitor

**Hello Science, Meet Creative Arts! (STEAM K-5)**

Grade: ELEM, Content: Science and the Arts (STEAM)

Jenna Mercury, ExploreLearning

Commercial Exhibitor

**Promoting Science Appreciation with #ScienceSaves**

Grade: ALL GRADES, Content: General

Christopher Moran, The Teacher Institute for Evolutionary Science

Therese Whitehurst, The Teacher Institute for Evolutionary Science

**Skull Comparison Lab on a Budget**

Grade: HS, Content: Biology/Life Science

Christopher Moran, The Teacher Institute for Evolutionary Science

**Evolution for Middle School Educators**

Grade: MS, Content: Biology/Life Science

Christopher Moran, The Teacher Institute for Evolutionary Science

Therese Whitehurst, The Teacher Institute for Evolutionary Science

**MineCraft, Engineering, & Biology**

Grade: ALL GRADES, Content: Biology/Life Science, Engineering, STEM

Angela Morris, Henry County Public Schools

**Intro to Project Learning Tree's® Forests of the World**

Grade: MS-HS-COL, Content: Environmental Science, Math in Science, General

Lesley Newman, Project Learning Tree, Virginia Department of Forestry

Ellen Powell, Virginia Department of Forestry

Not-for-Profit Exhibitor

**The Shallow End of the Teacher Leader Pool**

Grade: ALL GRADES, Content: Everyone/Every subject

Heather Overkamp, Portsmouth Public Schools

Dara Brinkman, Portsmouth Public Schools

**The Deep End of the Teacher Leader Pool**

Grade: ALL GRADES, Content: Everyone/All levels

Heather Overkamp, Portsmouth Public Schools

**Workshop for Teachers that Mentor Students in Research**

Grade: ALL GRADES, Content: Everyone/All levels

Heather Overkamp, Portsmouth Public Schools

**Using Solar Energy to Power Learning**

Grade: ALL GRADES, Content: Environmental Science, Engineering, STEM

Remy Pangle, Center for the Advancement of Sustainable Energy at JMU

Meghan Milo, Sun Tribe Solar

Not-for-Profit Exhibitor

**Integrating Science Using a Cup, a Tray, and a Great Book**

Grade: ALL GRADES, Content: Math in Science, General, STEM

Lori Pawlik, Colgan High School/Prince William County

**“Probing” Chemistry Topics with Texas Instruments**

Grade: MS-HS, Content: Chemistry

Wendy Peel, Texas Instruments, Inc.

Commercial Exhibitor

**Simulations, Data Collection and Assessments Oh My!**

Grade: MS-HS, Content: Biology/Life Science, Chemistry, Physics/Physical Science

Wendy Peel, Texas Instruments, Inc.

Commercial Exhibitor

**More Than Hands On**

Grade: ELEM-MS, Content: Authentic learning

Karen Perry, Roanoke County Schools

**The Science Standards of Learning Development and Revision**

Grade: ALL GRADES, Content: K-12 Educators

Anne Petersen, Virginia Department of Education

Myra Thayer, Virginia Department of Education

Gregory MacDougall, Virginia Department of Education

**VDOE Update**

Grade: ALL GRADES, Content: K-12 Educators

Anne Petersen, Virginia Department of Education

Myra Thayer, Virginia Department of Education

Gregory MacDougall, Virginia Department of Education



**A Bewildering Tale**

Grade: HS, Content: Biology/Life Science  
Jinx Rasmussen, Virginia High School  
Amanda Gardner, Virginia High School  
Engaging Strategies for Teaching Forensic Science  
Grade: MS-HS, Content: Biology/Life Science, STEM  
Kaitlyn Ray, Charlottesville High School

**Student-Centered Science using SEPs**

Grade: ALL GRADES, Content: General  
Eric Rhoades, Retired

**The Genetics of Education**

Grade: ALL GRADES, Content: Psychology/Behavioral  
Genetics  
Bryan Rhodes, Reynolds Community College

**Performance Tasks for Middle School Science**

Grade: MS, Content: Assessment/Performance Tasks  
Kimberly Rice, Five Ponds Press  
Commercial Exhibitor

**Performance Tasks for Elementary Science**

Grade: ELEM, Content: Assessment/Performance Tasks  
Kimberly Rice, Five Ponds Press  
Commercial Exhibitor

**Tackling Misinformation**

Grade: ALL GRADES, Content: Biology/Life Science  
Erin Rierson, Rustburg High School  
Jamie Banton, Rustburg High School

**It's Phenomenal! Real-World Science to Support  
3D-Learning**

Grade: MS-HS-COL, Content: Earth/Space Science,  
Biology/Life Science, Physics/Physical Science  
Steven Romano, Savvas Learning Company  
Commercial Exhibitor

**Amplifying Instruction to Reach ELs in the Science  
Classroom**

Grade: ALL GRADES, Content: General  
Alexis Rutt, University of Mary Washington  
Erich Sneller, Harrisonburg City Public Schools

**Empowering Student's Scientific Literacy with C-E-R**

Grade: ELEM-MS, Content: Scientific Literacy  
Jennifer Saleeba, Rocky Mount Elementary  
Lisa Angell, Ferrum Elementary

**Creative Projects Using Research and Data**

Grade: MS-HS, Content: Biology/Life Science  
Patrick Scharf, Louisa County Public Schools

**Do You Teach AP? Lets Learn How the CRR Can Help**

Grade: HS-COL, Content: Biology/Life Science,  
Environmental Science, Physics/Physical Science  
Alice Scheele, Patrick Henry High School

**Unraveling Chromosomes Through Modeling**

Grade: HS-COL, Content: Biology/Life Science  
Alice Scheele, 3D Molecular Designs  
Commercial Exhibitor

**Lets Get Interactive! Are Science Notebooks for You?**

Grade: HS-COL, Content: Biology/Life Science, Chemistry,  
General  
Alice Scheele, Patrick Henry High School  
Bryan Buckalew, Patrick Henry High School  
Jennifer Falin, Louisa High School

**Getting Real to Get Better: Rebuilding Rigor and Rapport**

Grade: MS-HS, Content: Biology/Life Science  
Kristin Scheible, Massaponax High School

**Unraveling the Mysteries of MWEEs with JRA**

Grade: ALL GRADES, Content: Environmental Science  
Matthew Scott, James River Association  
Charles Johnson, James River Association  
Not-for-Profit Exhibitor

**Teaching Chemistry Lab Skills - Inexpensively and  
Quickly!**

Grade: MS-HS, Content: Chemistry  
Jen Sharp-Knott, Floyd County High School

**AI-Driven Mock Classroom Science Fair**

Grade: ALL GRADES, Content: General, STEM  
Demetrice Smith-Mutegi, Old Dominion University  
Tamu Crisden, Old Dominion University

**Pipette Micro Rockets**

Grade: HS-COL, Content: Chemistry, Math in Science,  
STEM  
Erich Sneller, Harrisonburg City Public Schools  
Suzie Smith, Harrisonburg City Public Schools

**Insights from Human Remains: East Marshall Street Well  
Project**

Grade: HS-COL, Content: Chemistry  
Tori Solano, Virginia Commonwealth University  
Tal Simmons, Virginia Commonwealth University  
Elizabeth Edmondson, Virginia Commonwealth University



**Collaborative Elementary Curriculum Design**

Grade: ELEM, Content: Elementary Science

Tammy Stone, Rockingham County Public Schools

Carrie Lillard, Mountain View Elementary School

Allison Gidari, Elkton Elementary School

Miranda Lyle, John Wayland Elementary School

**Inspiring Innovators**

Grade: MS-HS-COL, Content: Earth/Space Science, Chemistry, Environmental Science

Rachel Stuart, Eastern View High School

Heather Glick, Eastern View High School

**Forms of Energy & Energy Transformations Interactive Lessons**

Grade: ALL GRADES, Content: Chemistry, Physics/Physical Science, General

Kimberly Swan, National Energy Education Development Project

Not-for-Profit Exhibitor

**Exploring Marine Hydrokinetics**

Grade: HS, Content: Environmental Science, Physics/Physical Science, Engineering

Kimberly Swan, National Energy Education Development Project

Not-for-Profit Exhibitor

**Kinematics as the Mathematics of Time-dependence**

Grade: ALL GRADES, Content: Physics/Physical Science, Math in Science

Tatsu Takeuchi, Virginia Tech Department of Physics

**Making Meaningful Connections CS Curriculum Integration**

Grade: ELEM-MS, Content: General

Keisha Tennessee, Virginia Department of Education

Kim Wilkens, Tech-Girls

**Swimming with the Fishes: Effects of Climate on Fish**

Grade: ELEM, Content: Earth/Space Science, General

Matthew Thayer, CBNERR/VIMS

Sarah Nuss, CBNERR/VIMS

Anna Caputo, CBNERR/VIMS

**What Do I Do About Vocabulary?**

Grade: ALL GRADES, Content: General

Myra Thayer, Virginia Department of Education

Anne Petersen, Virginia Department of Education

Gregory MacDougall, Virginia Department of Education

**Gotta Talk: How to Facilitate Productive Classroom Talk**

Grade: ALL GRADES, Content: General

Myra Thayer, Virginia Department of Education

Anne Petersen, Virginia Department of Education

Gregory MacDougall, Virginia Department of Education

**Science Teaching Revisited: The STEM Clinical Experience**

Grade: ALL GRADES, Content: Math in Science, General, STEM

Kianga Thomas, Norfolk State University

Shafeeq Ameen, Norfolk State University

**Increasing Student Participation in Independent Research**

Grade: HS-COL, Content: General, STEM

Matthew (Matt) Togna, Collegiate School

**A Breath of Fresh Air**

Grade: ALL GRADES, Content: Environmental Science

Melinda VanDevelder, Virginia Commonwealth University School of Education

**Laparoscopic Surgery Simulation in Your Classroom**

Grade: ALL GRADES, Content: Biology/Life Science, Chemistry, STEM

Cindy Watson, Bedford County Public Schools/Forest Middle School

Zero- Gravity- Taking Your Classroom to the Next Level

Grade: MS-HS, Content: Earth/Space Science, Math in Science, STEM

Cindy Watson, Bedford County Public Schools/Forest Middle School

**Bernoulli, Pressure and more -Demonstrations for class.**

Grade: HS, Content: Physics/Physical Science

Tony Wayne, Albemarle High School

**Using Talk as Tool for Learning in High School Science**

Grade: HS, Content: General

Angela Webb, James Madison University

**Get Involved with the Journal of Virginia Science Education!**

Grade: ALL GRADES, Content: General

Angela Webb, James Madison University

Joi Merritt, James Madison University

Experiencing Science as a Language Learner

Grade: ALL GRADES, Content: General

Angela Webb, James Madison University

Emily Stewart, James Madison University

### **Repairing the Climate System's Yellow Brick Road**

Grade: ALL GRADES, Content: Earth/Space Science, Environmental Science, Physics/Physical Science

John White, U.S. Gov't - Meteorologist

Laurie Ashworth, Pittsylvania County Schools

### **Transdisciplinary Learning through Artifact**

#### **Conservation**

Grade: MS-HS-COL, Content: Chemistry, Engineering,

#### **STEM**

Rachel White, Landstown High School STEM Academy

VBCPS

Megan Wong, Landstown High School STEM Academy

VBCPS

Laura Newsham, Landstown High School STEM Academy

VBCPS

### **STEM Majors in Sustainability, Environment, &**

#### **Conservation**

Grade: HS-COL, Content: Biology/Life Science,

Environmental Science, STEM

John Gray Williams, Virginia Tech - College of Natural

Resources and Environment

Not-for-Profit Exhibitor

### **Elementary Teachers and STEM Teachers Coffee Talk**

Grade: ELEM, Content: Environmental Science, General, STEM

Laurie Witt, Martinsville City Public Schools

### **A Meaningful Watershed Experience Can Be as Easy as 1,2,3!**

Grade: ELEM, Content: Environmental Science, General, STEM

Laurie Witt, Martinsville City Public Schools

Krista Hodges, Dan River Basin Association

### **Using Bloom's Taxonomy and Webb's DoK to Increase Rigor**

Grade: ALL GRADES, Content: Earth/Space Science, Environmental Science, General

Tabatha Zarkauskas, Prince William County Public Schools

**Presentation list including the days, times, and locations can be found at <https://vast.wildapricot.org/2023pdi>, the WHOVA App, and the PDI printed program.**





## VIRGINIA ASSOCIATION OF SCIENCE TEACHERS 2023 PROFESSIONAL DEVELOPMENT INSTITUTE



### MENUS

#### CONTINENTAL BREAKFAST

**Friday & Saturday** - (BREAKFAST IS INCLUDED WITH THE PDI REGISTRATION FEE)

Assorted Seasonal Fruit (Chef's Choice) Homemade Coffee Cake

Assorted Scones Fresh Muffins Orange Juice

Freshly Brewed Regular & Decaffeinated Coffee Hot Tea

**Meals must be purchased by  
October 31. None can be  
purchased on site at the hotel.**

#### TICKETED FRIDAY LUNCH BUFFET - \$27.00

**page 3: change early bird registration which has expired to  
online registration closes on October 31, after that register on site at the PDI.**

(NOT INCLUDED IN THE PDI REGISTRATION FEE, PURCHASE A LUNCH TICKET USING THE ONLINE PDI REGISTRATION FORM, DEADLINE TO REGISTER AND PAY FOR A LUNCH TICKET IS OCTOBER 31, LUNCH TICKETS ARE NOT AVAILABLE FOR PURCHASE ON SITE AT THE PDI)

Tangle of Mixed Greens- baby greens, carrots, cucumbers, tomatoes ranch & balsamic vinaigrette

Chef's Choice of Composed Salad

Lemon Chicken Dill bechamel

Portobello Farfalle

Whole wheat pasta, black kale, roast tomato, ricotta, mozzarella herbs

Chef's Choice of Seasonal Starch Chef's Choice of Fresh Seasonal Vegetable

Freshly Baked Rolls & Butter

Chef's Selection of Desserts

#### TICKETED FRIDAY DINNER - \$45.00

(NOT INCLUDED IN THE PDI REGISTRATION FEE, PURCHASE A DINNER TICKET USING THE ONLINE PDI REGISTRATION FORM, DEADLINE TO REGISTER AND PAY FOR A DINNER TICKET IS OCTOBER 31, DINNER TICKETS ARE NOT AVAILABLE FOR PURCHASE ON SITE AT THE PDI)

**Red Oak Arugula Salad**- Blue cheese, red grapes, honey sherry vinaigrette, balsamic vinaigrett

**Pan Roasted Chicken** with white wine pan sauce

Mashed Potatoes Green Beans

Freshly Baked Rolls & Butter

Dessert TBD

Freshly Brewed Regular & Decaffeinated Coffee, Iced Water

#### TICKETED SATURDAY BOXED LUNCH - \$38.00

(NOT INCLUDED IN THE PDI REGISTRATION FEE, PURCHASE A BOX LUNCH TICKET USING THE ONLINE PDI REGISTRATION FORM, DEADLINE TO REGISTER AND PAY FOR A BOX LUNCH TICKET IS OCTOBER 31, BOX LUNCH TICKETS ARE NOT AVAILABLE FOR PURCHASE ON SITE AT THE PDI)

**Farmer's Market Pasta Salad**- Penne pasta, zucchini, yellow squash, carrot, tomato, corn, kalamata olives, fresh mozzarella pearls, herb vinaigrette

#### SANDWICHES CHOICES AVAILABLE

(A specific sandwich choice cannot be designated when purchasing a lunch ticket. A certain number of each choice will be available on Saturday. Once a specific choice is gone no more of that choice will be available.)

**California Turkey**- Sliced turkey, leaf lettuce, bacon, tomato, avocado aioli, wheatberry bread

**Virginia Ham & Muenster**- Arugula, tomato, red onion, honey mustard, brioche bun

**Vegan Roasted Vegetable Hummus Wrap** (VN)- Zucchini, squash, asparagus, red peppers, spinach, hummus, whole wheat wrap



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WorldStrides is a proud sponsor of the **Night with the Exhibitors** during the 2023 Professional Development Institute. We can't wait to see you in November for a **Taste around the World** while we share with you how easy it is to organize a hands-on, science-filled, educational travel program for your students.

**Thursday, November 16**  
**7:30 PM – 9:00 PM (Roanoke Ballroom C-H)**



*Celebrating 55 Years of Life-Changing Moments*



**Friday, November 17 (7 - 9 pm)**  
**Science Museum of Western Virginia**  
**Viewing Party**

Come join us and celebrate our showcasing of the EYE (the upgraded planetarium). While you enjoy DJ Rodney and meet our Regional Directors with Colleges and Universities for Banner Days.



## Virginia Association of Science Teachers Shirley Sypolt Memorial Mini-Grant Application

The Virginia Association of Science Teachers recognizes one of their own by establishing “The Shirley Sypolt Memorial Mini-Grant in Elementary Education.” Shirley Sypolt cared deeply for not only her colleagues, but especially for her students. She delighted in helping them identify their hidden talents not only in elementary school but onto their careers. Shirley was a strong advocate of elementary education and instilled this passion for science and research in every student she touched. She taught at Cooper Elementary in Hampton, Virginia for 26 years. She was a tireless worker with VAST for over 20 years. During her lifetime, she received awards and recognition for her capacity to instill the love of science in others. It is these characteristics that we seek as applicants for the Shirley Sypolt Elementary Education Mini-Grant. Grant funds may be spent for supplies, equipment, printing, and other materials essential to the project. Grant funds are not intended for student travel (field trips) or for the personal remuneration of the grant recipients. All materials will become the property of the school/school system in which the Project Director is employed at the time the grant is awarded.

Awardees will be selected by a committee appointed by the VAST President. The committee will be looking for projects that will directly impact student learning in the science classroom. Ideally, the projects that are funded will provide the students with new experiences and make possible new scientific investigations. Preference will be given to persons who have not received prior VAST mini-grant awards. Applicants must be a member of VAST. Applications are due by September 30 of the current calendar year.

Awardees will be recognized at the VAST PDI. They will receive up to a \$400 grant.

Upon completion of the funded activity, the Project Director is responsible for submitting the following by June of the following year:

- 1) a short summary report to [president@vast.org](mailto:president@vast.org)
- 2) a brief article about the project for the newsletter to [newsletter@vast.org](mailto:newsletter@vast.org)
- 3) an accounting of how/where the project funds were spent to [treasurer@vast.org](mailto:treasurer@vast.org)
- 4) a presentation sharing the project at a VAST Regional meeting or at the VAST PDI
- 5) return any unused funds to VAST treasurer

The mini-grant requirements and application form may be accessed on the VAST web site [www.vast.org](http://www.vast.org). If not submitted on-line, this form below is to be copied and submitted as a coversheet. Please fill in (print) all information, and attach:

- 1) a budget showing how you plan to utilize the funds; and,
- 2) a summary of the project details (2-page maximum) - to include: general purpose, goals, a plan of action and anticipated outcomes.

---

### Shirley Sypolt Memorial Mini-Grant Application Form

Project Title: \_\_\_\_\_ Funding requested: \$ \_\_\_\_\_

Project Director's name: \_\_\_\_\_ School: \_\_\_\_\_

Home Address: \_\_\_\_\_ City \_\_\_\_\_ Zip \_\_\_\_\_

Home Phone: \_\_\_\_\_ Email: \_\_\_\_\_

School Division: \_\_\_\_\_ School Phone: \_\_\_\_\_

Additional team members:

Name(s): \_\_\_\_\_

The project will: Serve grades: \_\_\_\_\_; Impact (#): \_\_\_\_\_ Students and \_\_\_\_\_ Staff members.

Send To: VAST Awards Committee, c/o Sandy Pace 6980 Coleman's Crossing Ave., Hayes, VA  
23072 Email: [space5@cox.net](mailto:space5@cox.net) Phone, if questions: 804-693-5936

Applications are due by September 30 of the current calendar year.



# VJAS

SENIOR'S ONLY:

## THE VIRGINIA ENVIRONMENTAL ENDOWMENT SCHOLARSHIPS

### The Frances and Sydney Lewis Environmental Science Scholarship

This \$5,000 college scholarship may be awarded to the 12th-grade student whose project presented at the VJAS Research Symposium evidences the most significant contribution in the field of Environmental Science. The purpose of the award is to stimulate interest in environmental sciences and to enable promising young students to pursue undergraduate studies in a related field. The Virginia Environmental Endowment (VEE) and the VJAS offer this scholarship in tribute to the outstanding and generous services of VEE Directors Emeriti, Frances A. Lewis, and Sydney Lewis.

### The Henry W. MacKenzie, Jr. Environmental Scholarship

This \$5,000 college scholarship may be awarded to the 12th-grade student whose project presented at the VJAS Research Symposium evidences the most significant contribution in the field of Environmental Science dealing with the James River Basin and the Chesapeake Bay. The purpose of the award is to stimulate interest in environmental sciences and to enable promising young students to pursue undergraduate studies in a related field. The Virginia Environmental Endowment (VEE) and the VJAS offer this scholarship in tribute to the outstanding and generous services of Judge Henry W. MacKenzie, Jr., one of the founding directors of VEE who had a great interest in the James River and the Chesapeake Bay.

These scholarships must be applied for and are decided by a special set of judges. The payment shall only be available to students during their first year of college. Students must provide VJAS with proof of attendance no later than November of their first year in college. No student may win more than one of the scholarships. Students may choose to have payment made directly to the university or to the student. Failure to provide the requisite evidence will result in forfeiture.

[See more details at vjas.org](http://vjas.org)



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sent after the event.



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# Teaching is NOT Mission Impossible: Surviving the Daily Grind

By Robbie Higdon, VAST Colleges and Universities chair and

Morgan Meadows, Partner Engagement Administrator: VA, MD, & DC, American College of Education

For many of us, the start of a school year always brings feelings of excitement and anticipation as we think about meeting our new students, adding new strategies to our instruction, and reconnecting with our colleagues. For Robbie, these feelings were quite different than the experience she had on her first day of my first year.

As I stood at the door ready to welcome my students, the bell rang to let the students know to enter the building and I burst into tears. I was suddenly overwhelmed by the realization that I was the person in charge. There was no cooperating teacher or university supervisor there to support me; I was THE TEACHER. I did not know if my students would like me or if they would listen to my directions. So, I put on my brave face, and I welcomed each student as they entered the classroom. And, to my surprise, many of them smiled back and my career in education had begun.

However, it is not long before I got overwhelmed by all of the challenges from being in the classroom every day. Lesson planning, emails, meetings, observations, standing on your feet for hours, eating lunch in 2 minutes or less. Teaching is challenging work, and it is important to know that all teachers struggle during various times of the school year. In the blog post *The Rollercoaster of Teaching* (2015), the author shared this graph, which was developed from a case study where novice teachers were surveyed at different times of the school year and how they were feeling. In the analysis, these common patterns were observed, and they resembled a roller coaster. Morgan remembers being fresh out of college and in her first year as a teacher. She was amazed at how accurate this chart depicts how she was feeling at the time.

So, whether you are in your first year, tenth year, or thirtieth year of being in the classroom, it is not uncommon to experience this same roller coaster pattern of emotions. All teachers experience these similar types of feelings every year. So, when you are feeling exhausted, overwhelmed, and stuck in the grind, remember that you are doing a great job! And, it is especially

important to check in with those early career teachers in your grade level, department, and/or building. This is the time during the school year they need our encouragement and support. Offer tips to help them prepare for parent/teacher conferences and the end of the grading period. Share a successful strategy. Offer to help them prepare their instructional materials. I know we can all think about a person who stepped in to help us manage these hectic days during these feelings of the “daily grind” between the end of the first grading period and the winter holidays.

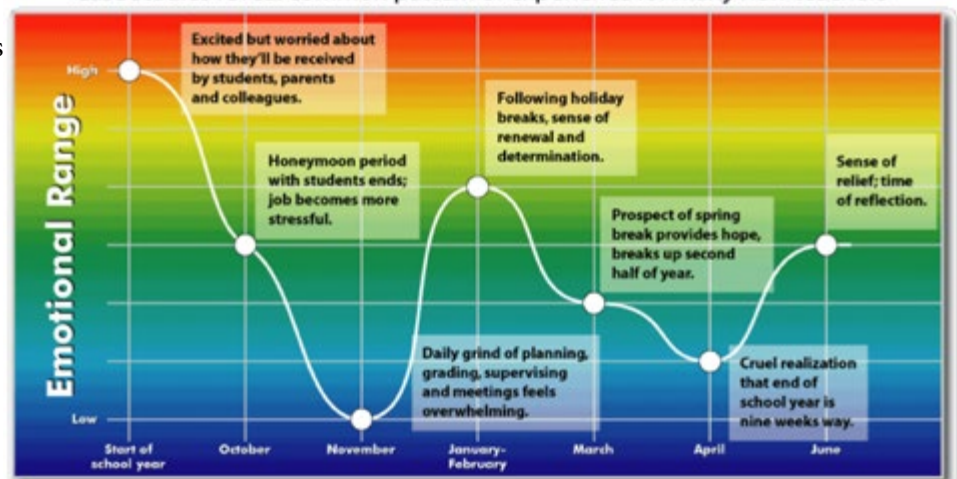
Finally, it is important to remember to take care of yourself. How can you do that? Here are just a few ways to gear up for winter holidays.

1. Make your lunch time your time. (Shut your door, turn off your lights, and breathe)
2. Take your school email off your phone
3. Make those last few days before break creative lab opportunities where you can have them highlight what they know.
4. Relax and make time for yourself during the break. You EARNED it!!

Do you have any advice or encouraging words you would love to give to novice teachers at the VAST conference? Let us know by leaving a note at [https://jamboard.google.com/d/1pdoDkLt5MRxQd4EMONE-rsozni\\_rrytjJXXVWh5wMM/edit?usp=sharing](https://jamboard.google.com/d/1pdoDkLt5MRxQd4EMONE-rsozni_rrytjJXXVWh5wMM/edit?usp=sharing)

## Roller coaster of emotions for first-year teachers

Case studies reveal common pattern of experience for many new teachers





# Lori Ann Pawlik is Awarded a Teachers Fulbright for Global Classrooms Program



This August, Lori Ann Pawlik received the Fulbright Teachers for Global Classrooms Program award from the U.S. Department of State and the Fulbright Foreign Scholarship Board. The government program is an international educational exchange supported by people from partnering countries. Lori will be making connections and sharing her knowledge both in the United States and in international communities. The program's goal is to find solutions that address worldwide concerns. Lori will conduct research and form partnerships and relationships with other educators to achieve this goal.

*"My destination has not yet been released, but this is a yearlong professional learning opportunity with a three-week international field experience for educators from the United States to develop skills to prepare students for a competitive global economy," said Pawlik. "I am excited for this opportunity to further connect students with the world and share global cultures through education with them, my colleagues, and everyone. Stay tuned!"* Lori Pawlik

Lori joined VAST in 2013 and attended the VAST Conference in Northern Virginia at the Westfields Marriott. She enjoyed the sessions so much that she joined the VAST Board in 2015 as an awardee of the Presidential Award for Excellence in Mathematics and Science Teaching (PAEMST). She stepped in to serve as the VAST Technology Chair during the pandemic and spent a year as the Region IV Director. Lori applied for the Sterling Award and has been volunteering for the Sterling program for several years. She is serving as the VAST president-elect this year and will be VAST president in 2024.

Lori Ann gained first-hand experience with the process of science and problem solving as an engineer. Then for twenty years she home schooled her eight children and traveled around the world as the spouse of a military officer.

Her next career was as a K-5 STEM teacher in Prince William County Public Schools. She taught at the elementary level for eight years. In 2018, she was the Virginia recipient of the Presidential Award for Excellence in Mathematics and Science Teaching as a K-6 educator.

A natural leader from the classroom, Lori stepped up again and began to teach physics at Colgan High School in the fall of 2020. With expertise in engineering and teaching she used project-based learning to encourage her students to address real-world problems. She used The United Nations Sustainability Developmental Goals to identify real world problems for some of those projects. In 2020, she was one of only 15 in the world selected to partner with a National Geographic Explorer with a goal toward helping her physics students to see themselves as global citizens who care about the world and their place in it.

In 2021 she received the Virginia Association of Science Teachers' Recognition (VAST) in Science Education award for Outstanding Physics Teacher for finding creative ways to teach high school physics during the 2020-21 school year.

The following links connect to more information about Lori Pawlik.

Video: **ABC7 News on Your Side from 2019**

<https://wjla.com/features/spotlight-on-education/prince-william-county-educator-10000-white-house-award>

Article: **Prince William Living**

<https://princewilliamliving.com/colgan-teacher-recognized-with-a-fulbright-teachers-for-global-classrooms-program-award/>

# The Value of a STEM Teacher

Dr. W. Jason Calhoun



In 1982 as a precocious second grader in Wilmington, Delaware, I met an educator who would change my life. Mrs. Hilda J. Poindexter was a petite five foot something giant in my life that was the tipping point for my career choice. As I enter my 25<sup>th</sup> year in STEM education I find myself becoming more and more reflective on the importance of educators and our long-lasting impact on children's lives. Mrs. Poindexter was a cornerstone to my love of science. There aren't too many weeks that go by that I don't think of her and the exposure she gave me to the world of STEM around me. One of my earliest memories of her class and probably before there was a formal name for the scientific method, Mrs. Poindexter had her class give her directions to make a peanut butter and jelly sandwich. She told us that she was going to follow our directions "*explicitly*". Making a sandwich is something that we all can probably easily do without giving the steps a second thought. However, that ability as an 8-year-old isn't innate, and with a class of 20 of us, I'm sure created a perfect set of ingredients to conjure up an atmosphere of chaos. The first step that she was given that I remember as clearly now as if it was yesterday, "put the peanut butter on the bread." The sight of Mrs. Poindexter rearing back and smashing the container of peanut butter on the loaf of bread is etched into my memory. With only a bit of hyperbole, in my mind she was Nolan Ryan rearing back to hurl a 100+mph fastball when she smushed that jar of Skippy into the loaf of Wonder Bread. I still remember the sound of the closed bag popping and sounding like to me a sonic boom and being mesmerized by all the happenings. The fun continued and at one point Mrs. Poindexter impaled the butter knife through the top of the jar to get to the peanut butter. The drama continued with lots of missteps as we tried to clearly express the scientific method that she should follow until finally she created a Frankenstein monster product vaguely resembling a PB&J. I share this small bit of my personal story to offer my sincere testimony on how critical and lasting the influence of a single teacher can have on our children. Virginia STEM educators, you are valued, you are critical, you are special, and you have influence well past the horizon.

I'm a unique statistic in many ways. I'm an African American male with advanced degrees in STEM whose entire career has been K-16 science education. Coming up teaching I could often count on my hands faces that looked like mine. I have always made it a critical piece of who I am to pay it forward and thank educators for everything that I am today. As a young student bussed to elementary school in the inner city, my love for STEM was nurtured at home beginning with my father who was a mathematics educator. However, it was with Mrs. Poindexter that I anchored my roots in loving science and the direction my career has followed. She was a candle in the dark for me. Educators, especially those of young impressionable students, are critical to impacting our career pipeline and encouraging all students to embrace those content areas that are often less traveled. The excitement I have when I think about science in my early schooling years, I always trace directly to that moment in second grade with Mrs. Poindexter.

Education for me has been an amazing career that allows me to have encounters with students that can make them aware of a door that is open to them or share a word to perhaps avoid mistakes I've made or seen. I tell my teachers all the time to embrace that "Spidey-Sense" that I believe all good educators have. That feeling when something just isn't right with one of our kids and we should help. Mrs. Poindexter did that for me when I'd lost one of my grandparents and didn't know how to process my feelings. She offered a kind word, a smile, and a gentle hug to help with the sorrow. I had the fortune as an early educator to have an encounter with a student I'll call "Joe". Joe was in the hall before school and his normal jovial demeanor was just off. Not sure what it was, but Joe wasn't Joe. I happened to be standing next to his Language Arts teacher and an administrator and we all noticed it. So, we spoke to him for a few minutes, I dapped him up, and told him to come see us if he needed to. Fast forward almost 15 years later from when he was in school, and Joe is now an engineer with a family. Joe reached out to the three of us and thanked us. What

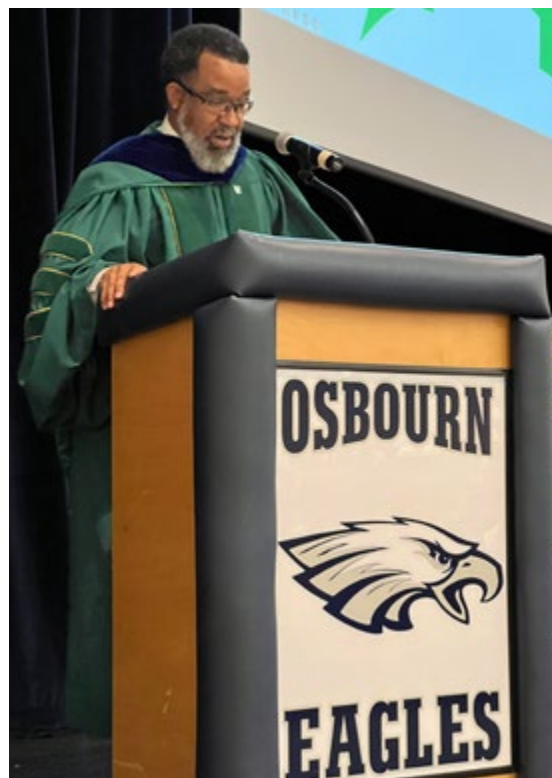


I had simply chalked up to perhaps the stereotypical moody hormonal 16-year-old having a bad day all those years ago, he explained to us couldn't have been further from the truth. Joe, as he wrote, was having a very tough week and when he went home that night from school, he had planned self-harm. As he told us, it was our conversation that day that stopped him. I still have a printout of that email to this day.

So, I say again to all VAST educators, your words, your actions, your support, your love of our kids has amazing, lasting, life-changing impact on our kids. In spite of these polarizing times when our livelihoods, our education, our credentialing, are challenged, know that I stand as testament of how phenomenal all of you are. I thank you for your time, your talent, your treasure in supporting Virginia's students.

Yours in Education,

Dr. W. Jason Calhoun



Jason Calhoun, Ph.D., Director – Governor's School @ Innovation Park

## USABO REGISTRATION IS OPEN!

The 2023 Team USA did well at the International Biology Olympiad in Al Ain, UAE winning two gold and two silver medals. The 2024 IBO will be held in Astan, Kazakhstan July 2 to 14, 2024.

From left to right:

**Gold Medal: Yufei Chen**  
(University High School, CA) Number 1 biology student in the world!

**Gold Medal: Kaiden Wu** (Thomas Jefferson School of Science & Technology, VA) Thank you for representing Virginia.

**Silver Medal: Damon Gurvich** (PrepEdu Consulting LLC, MD)



**Silver Medal: Richard Zhu**  
(North Hollywood High School, CA)

**Congratulations to their teachers!**

**David Knight**, University High School, Irvine, CA

**Kathleen Morrow**, Thomas Jefferson School for Science & Technology, Alexandria, VA

**Max Cai**, PrepEdu Consulting LLC

Please place this piece in the next newsletter to encourage Virginia Schools to participate in the USA Biolympiad. Thank you for your consideration. Kathy Frame. USABO Consultant & Advisor

E: [kframe@cee.org](mailto:kframe@cee.org)

C: 571.228.0098.

W: <https://www.usabo-trc.org/>

George Mason University,

SciTech Campus– Colgan Hall 301



## VJAS (Virginia Junior Academy of Science): Update 9/23/23

- We are pleased that VDOE has sent the word out: The Virginia Junior Academy of Science ([VJAS](https://www.vjas.org)) is a virtual juried science symposium that includes authentic research experience for secondary school students (grades 7-12) in science, technology, engineering, mathematics, and related fields. Students who participate in the juried 2024 Annual Research Symposium gain the experience necessary to earn the [Virginia Department of Education's](#) STEM Seal or Seal for Excellence in Science and the Environment on their diploma. VJAS is looking to recruit mentors and secondary school teachers who want their students to participate in a virtual long-term research project. Secondary science teachers interested in having a mentor work with your class need to register their schools by the January 15, 2024 deadline.
- A benefit of registering early will be access to student work as submitted to check for DQ, etc. We will review and support.
- The new look for VJAS is the Symposium will run as a conference. Students who are accepted to present will be presenters, students who are not accepted will still be able to attend the Symposium in order to learn. Similar to how we as adults attend our professional conferences with general session speakers and concurrent sessions. We hope to model this for our future scientists.
- Please check out the Student published VOICE at <https://vjas.org/vjas-voice.html>
- Student officers will conduct an informational STEMinar on October 15 at 5 pm. The STEMinar Registration link: <https://forms.gle/BuVWG6PMWp6R1heW7> [forms.gle]. Please let your students know of this event.
- See the following link for more information **VAS Offers a Mentor** (<https://vjas.org/resources.html>)

### Virginia Academy of Science (VAS) Mentorship Program

The Virginia Academy of Science is excited to once again offer its mentorship program for K-12 classrooms across Virginia to pair scientists with K-12 classes to perform long-term science projects. Once again, we are looking to recruit both mentors (grad students, postdocs, instructors, scientists, etc.) and high school teachers who would like their students to participate in a virtually-driven long-term research project. We have partnered with the Virginia Junior Academy of Science ([www.vjas.org](http://www.vjas.org)) in this endeavor in the hopes that this project will encourage participation in their 2024 Annual Research Symposium and give students the juried research experience necessary to earn the Virginia Department of Education's new Seal for Excellence in Science and the Environment on their diploma. Mentorships may be in-person, virtual, or hybrid, and we would like to offer middle and high school instructors the opportunity to either do a project of local interest or to participate in a "Citizen Science" type initiative in which their class will work with others across the Commonwealth and (sometimes) the nation in the collection and analysis of data. I am excited for this model since it should allow a greater level of participation with geography and distance not being limiting factors.

Even if you signed up last year, to avoid unwanted emails to those who do not wish to participate this year I am asking you to sign up using the appropriate link below.

If you are interested in serving as a mentor in this project, please fill out the form found at:  
<https://secure4.hsc.edu/forms/view.php?id=117158>

If you are a high school teacher with an interest in having a mentor work with your class, please fill out the form found at:  
<https://secure4.hsc.edu/forms/view.php?id=116443>

Please do not hesitate to contact me ([mwolyniak@hsc.edu](mailto:mwolyniak@hsc.edu)) with any questions you may have, and please pass this announcement along to any other contacts you think may wish to participate.

Thank you for your consideration of this opportunity!

Michael J. Wolyniak, McGavacks Associate Professor of Biology  
Director, Office of Undergraduate Research  
Hampden-Sydney College, Box 183, Hampden-Sydney, VA 23943

- **The Phil Robinson Research Grant** deadline is November 1, 2023. For more information go to page 57 of the [Handbook](#).

Feel free to contact the VJAS Associate Director, Robin Curtis at [associate.directorvjas@gmail.com](mailto:associate.directorvjas@gmail.com)

# SCIENCE FOR ALL

George Dewey

## Whose Climate?

Let dreamers dream what worlds they please;  
Those Edens can't be found.  
The sweetest flow'rs, the fairest trees,  
Are grown in solid ground.

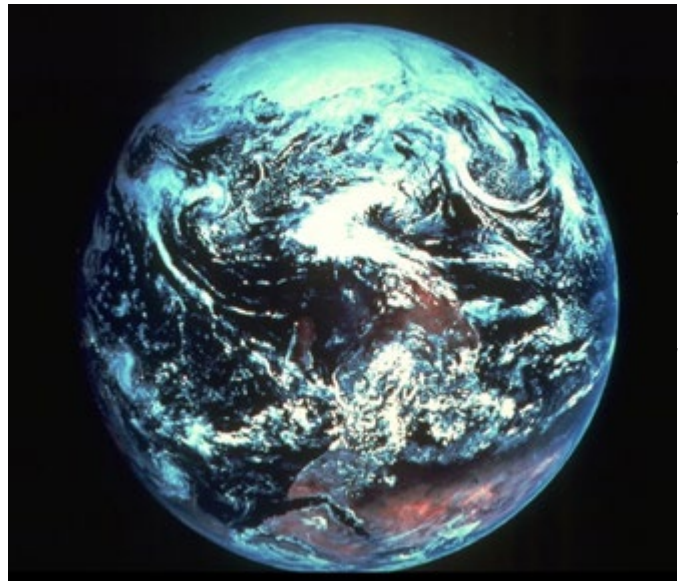
We're neither pure nor wise nor good;  
We'll do the best we know.  
We'll build our house, and chop our wood,  
And make our garden grow.

— Richard Wilbur

A couple of decades before the founding of our country, the French philosopher, Voltaire, wrote *Candide* to satirize the prevalent and popular optimism of his European culture. His thinking was heavily influenced by John Locke, Isaac Newton, and Francis Bacon during the age of reason; “Common sense is not so common” he once wrote. In *Candide*’s global adventures, Voltaire pictures a world which is often irrational, indifferent, and violent – adjectives which might well describe our world today.

By the time Richard Wilbur and Leonard Bernstein completed the operetta *Candide* in 1956, with a flourish of optimism the final song declared that we must tend our local garden despite the many flaws in our personal or group character. In today’s eco-culture we hear the phrase, “Think globally, act locally.” In fact, we face the tension between these two overlapping visions every day in our classrooms as we strive to help our kids see the wider effects upon others of what might seem to us an unthinking comment or action.

We are all immersed in the existential dilemmas posed by the climate (personal and environmental) in which we live and which is responding more and more significantly to our disruptive activities. In our current news reporting, descriptions like “crisis,” “disastrous,” “unprecedented,” “record-breaking” have become clichés. The local effects we see almost daily come from storms in Bulgaria, Greece, Liberia, or here in California, Louisiana, Texas, Florida, even Maine and Vermont. As drought conditions have spread, the threats from massive fires have escalated, from California to Canada, from Hawaii to Greece. The states of Arizona, Nevada, and California are wrestling with the necessity



NASA and US Bureau of Land Management

Human origins. Only 3% of our water is fresh, mostly (69%) frozen in ice caps and glaciers, leaving 1% available for land life. The Antarctica and Greenland Ice Sheets contain over 99% of the ice on Earth’s surface. (American Museum of Natural History)

for collaboration on their allocations of water from the Colorado River (*Christian Science Monitor*, 19 June 2023). After a year of tense negotiations, a voluntary proposal has been reached on limiting those states’ water use, potentially conserving 3 million acre-feet by the end of 2026.

A study in *Nature* (June 2023) addressed the conditions of human well-being and equity associated with our planet’s health. The eight areas measured were aerosols (air pollution), surface water, groundwater, nitrogen fertilizers, phosphorus fertilizers, whether natural ecosystems remained largely intact, the functional integrity of all ecosystems, and climate change. The conclusion was we are at a tipping point, corroborated by the March 2023 United Nations report that the 1.5° C safe limit for climate change could be reached early in the next decade.

Warning signs are surrounding us: bleaching of coral reefs off Australia and Florida; 3.5 times greater ice loss from Greenland and Antarctic Ice Sheets from 2017-20 (410 billion tons) compared to 1992-96 (116 billion tons); increases in both frequency and intensity of storms world-wide; a decline in bird populations of 3 billion in the last 50 years (*Science* 2019). That is not to say avian populations are dropping solely due to climate changes alone, but loss of habitat (forests, grasslands) and pesticide use also have taken their toll according to Brooke Bateman of the Division of Climate Science, National Audubon Society. She reported (*PBS Newshour*, 11 June 2023) that two-thirds of North American bird species are on the edge of extinction. The *Science* report covered only Canada and



the US: percentage declines by habitat were 55% grasslands, 35% boreal forests, and 30% western forests. Bateman sums up the role birds play in curbing insect and invasive species populations, in addition to their role in pollination saying, “Birds tell us what is happening in an ecosystem.” We are also reminded of the 60<sup>th</sup> anniversary of Rachel Carson’s seminal *Silent Spring* in 2022, one effect of which was banning the pesticide DDT.

Finally, in July<sup>1</sup> the results of a study were published in the journal, *Nature Communications*, suggesting the northward-flowing Atlantic Meridional Overturning Circulation (AMOC) may be approaching its own tipping point due primarily to the melting Greenland Ice Sheet. The admittedly limited evidence points to an instability whose ultimate effect could be to change weather patterns and climate on both sides of the Atlantic.

There are a great many examples of the effectiveness of local action upon seemingly intractable global problems. A journalist at the *Christian Science Monitor* put it this way: “With the impacts of human-caused climate change ever more apparent, more people I interview are telling me that collaboration with nature is necessary – not by blocking it off or ignoring it, but by recognizing we are part of it.”<sup>2</sup>

Tribal leaders in our mid-west and western-most states have much to teach us about human connection to land. Our European heritage with its obsession over land ownership, lies in sharp contrast to our Indigenous populations’ philosophy of oneness and stewardship with the land. We see this in the contentions around water usage, but basically on how we value land. In this sense of the term “climate” we consider the relationship, not merely between human and natural systems, but also between one another. The rumblings from environmental thunder claps are sending us messages that extend beyond our narrow perspectives; our actions now have a global impact way beyond – and upon – our narrow parochialism.

Indigenous communities from the Amazon to South Dakota know by instinct and tradition what it means to live with nature without combat. The ill-considered “channelization” efforts of the Army Corps of Engineers in Florida and Louisiana remind us of the value hidden among the mangrove roots in coastal area ecosystems. The fight over compensation for tribal lands is put this way by a Sioux elder: “[Once we sell our land], there goes our birthright. We would no longer be,” she adds, “We wouldn’t be who we are. Because that means we are for sale. They bought us.”<sup>3</sup>

Far away in the Pacific, a Princeton-educated diplomat speaks as climate envoy for her native Marshall Islands.

Living the legacy of nuclear testing in the islands, the added threat lies in sea-level rise. If sea levels rise by the predicted 1-meter by this century’s end (something none of us are likely to experience), 40% of their capital city will be submerged. This world-wide consequence to climate change is summarized by the first Latino president of the 130-year-old Sierra Club: “The same people whose votes are being suppressed are the people who are most affected by the climate crisis, and who have suffered a history of pollution. We can no longer think of these issues in silos.”<sup>4</sup> No wonder most of the world is frustrated and angry at rich and powerful nations.

Some instructive figures help us if we examine the history of the automobile.<sup>5</sup> The annual number of vehicles (car, truck, bus) produced globally was only 4000 in 1900; by 2020 it had exploded to 95 million. Examining the totals at the end of each decade (1900-2020), and interpolating an average for intervening years [only 1940 saw a slight drop from 6 million in 1930, to 5 million in 1940, but a surge to 11 million by 1950], there were a total of 3.5 billion vehicles produced world-wide over eleven decades. In 2019 alone there were 1.5 billion vehicle registrations globally. Numbers in the billions are awfully hard to comprehend. However, seeing that a billion seconds is 32 years [an electronic clock marking each second would take that long to reach that total]; and a billion-sheet stack of paper would reach 63 miles [About the distance from Fairfax to Baltimore, or Charlottesville to Richmond.], this can help us visualize what a billion actually means.

Just imagining a quantity of 1.5 billion vehicles moving around earth’s highways is not at all an easy task! Put another way, if they were all small cars (think Toyota Corolla) lined up bumper-to-bumper, the line would stretch 159 times around the earth; that’s 16.7 lines of traffic from earth to moon. For an SUV (think Chevy Suburban), the line would be 214 times around the earth, more than 22 lanes from here to the moon! Globally, in 2016 the motorization rate was 832/1000 people; in the US in the same year, it was 1.4 per person. No wonder in the Levitt subdivision where I live, it is not uncommon to see four or five cars jammed in a single driveway. This is not to suggest we give up our love affair with cars; it almost seems a rite of passage once a son or daughter gets a driver’s license, they get a car. But it should be less of a surprise that vehicular emissions contribute negatively to both our respiratory and cardiovascular health, in addition to CO<sub>2</sub> build-up in our atmosphere...and is it not truly **our** atmosphere? In addition, last year, our world consumed more coal than ever before! How things have changed from the days when, in our country as abroad, seeing the dark clouds of smoke puffing from the steam engine brought whoops of

anticipation from folks in the countryside or at the train station. Why are we surprised that the climatological finger points toward the internal combustion engine and the power plant?

But is not our job, our ministry as teachers, to open new horizons and compassionate ways of seeking solutions to problems we face like these? Especially in the sciences where data-driven and open answers are sought and practiced. No wonder young people are demonstrating from Germany to the Philippines, angry at the speed and greed with which we adults avoid acting toward mitigating climatic threats. Perhaps the poster child for these emotions is the young Swedish student, Greta Thunberg. A few of her angry remarks at the 2019 United Nations Climate Action Summit follow<sup>6</sup>:

“The popular idea of cutting our emissions in half in 10 years only gives us a 50% chance of staying below 1.5 degrees [Celsius], and the risk of setting off irreversible chain reactions beyond human control.

“Fifty percent may be acceptable to you. But those numbers do not include tipping points, most feedback loops, additional warming hidden by toxic air pollution or the aspects of equity and climate justice. They also rely on my generation sucking hundreds of billions of tons of your CO<sub>2</sub> out of the air with technologies that barely exist.

“So, a 50% risk is simply not acceptable to us — we who have to live with the consequences.

“My message is that we’ll be watching you.”

Rebecca Solnit, author of *Hope in the Dark*, editor of *Not Too Late: Changing the Climate Story from Despair to Possibility*, offers an opinion piece in the *Washington Post* in which she addresses the fury of young protesters. Yet she maintains, “The good news is, the knowledge that we are not separate from nature but dependent on it is already far more present than it was a few decades ago” ...When we know that globally “breathing air contaminated by fossil fuel kills more than 8 million people a year,” then there is

another reason than rising CO<sub>2</sub> levels should change the destructive consequences of our habits... “What if climate change meant not doom – but abundance?”<sup>7</sup>

Not everything that is faced can be changed,  
But nothing can be changed until it is faced.

— James Baldwin

*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](mailto:gtdewey3@outlook.com)

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