



VAST's Vision:
Excellence in Science Education
Through Innovation

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

The Science Educator

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The Year to Remember: 2024

Solar Eclipse: April 8, 2024



NASA Photo

Total Solar Eclipse from August 2017

A total solar eclipse will pass over North America on April 8, 2024. Although Virginia is not in the "path of totality", it is an event you will want to share with your students.

[Find out when it will occur where you are.](#)

For more [information about the eclipse and a simulation of the path of the total eclipse, click here.](#)

[The Eclipse 24 NASA site.](#)

April and Early May



Magicicada Cicada Are Coming!

Get Ready! Brood XI of *Magicicada tredecim*, cicada, are coming. In April to May 2024, there will be an emergence of cicada in Virginia primarily in the counties of Caroline, Gloucester, Halifax, James City, King and Queen, King William, Middlesex, New Kent, and York. This brood has a seventeen-year cycle.

There are broods of periodic cicada with either a 13 year or 17 year cycle. Most of the lives of periodic cicada are spent as nymphs underground getting nourishment from tree sap. They emerge in the spring of the final year of their cycle, when the soil, eight inches below the soil surface, warms to 64°F.

Plan to use the cicadas as teaching resources. Here are two resources: [Cicadia Mania](#) [NPR-Two Broods Emerge](#)

VAST Professional Development Institute 2024

November 14, 15, 16, 2024

"If you talk to a man in a language he understands, that goes to his head. If you talk to him in his own language, that goes to his heart." Nelson Mandela

This quote by Nobel Peace Prize laureate, Nelson Mandela, has a direct bearing on the importance of global education. Virginia has the 34th largest school system in the United States (out of 13,200!) and our students come from all over the globe. Several of our districts have a vision to produce global citizens. In this era of post-pandemic concern for learning loss, we have a responsibility to help our students solve problems, develop working relationships, care for each other... and the world. By helping students explore cultures across all grade levels and disciplines, they will understand the perspectives of other people, develop empathy, increase their knowledge and become global citizens.

The 2024 PDI will explore science, of course... but I challenge you to use your own curiosity to look at



science through a lens for inspiration as you view our interconnected world.

THIS is global education...let's begin!

Lori Ann Pawlik - VAST President

[Register for PDI Here](#)

[Complete & up to date info on the PDI here.](#)

From the Executive Director

Who is Making the Difference?



Susan Booth

It's time to make the impact every teacher desires in their classrooms. The last push to the end of the semester is fast approaching, for some in May and others in June.

Our second newsletter, filled with resources, arrived today.

Wait! Is there any time for you, as the educator, to review the newsletter? Are you paying attention? VAST is here for you. We want you to be the best you can be! What do you need? Let us know.

We always tell you what we need regarding your contributions: Presenters, Writers, Grant applications, but what do you need? Our work is essential, but your work is more important than ours. So, talk to your colleagues and go beyond readership. Please help us grow, and let's make the opportunities endless.

Thank you for being so supportive, and thank you in advance for shaping our future.

Susan Booth

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

Mission of the Virginia Association of Science Teachers (VAST)



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

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March—ing Forward!



Greetings! Do you remember how I talked about all the re- words during my last President's message? I discussed how the New Year brought lots of different avenues for renewal and re-evaluation. Well... the same can be said for the emergence of spring. Especially in the science realm... we get a little excited! We have new animal babies born along with new plant growth. I encourage you to use springtime to take your students outside to observe, sketch, and view the changes that are occurring in their own environment. Find something *new* to add to your teaching strategies and use it! I encourage you to use this issue of the Science Educator to glean ideas and opportunities that will be beneficial to re-energizing your own toolbox of tips.

I'll start off by sharing something new: our PDI registration is opening!! Be sure to get on the

website to check it out and secure your lodging, registration, food, visits, etc. Visits, you say? YES! With our regular wonderful PDI venture into Global Education, our registered attendees have some special options. Some also include a family option. Colonial Williamsburg is offering a major discount for a visit on Thursday, November 14. Then, on Friday evening, Busch Gardens has a special event for us. You will want to stay until after the final speaker on Saturday because we are working on something very special. This is ONE conference where you will get your fill of Professional Development and you'll be really GLAD that you came – it's totally worth it!

Lori Pawlik

2024 VAST President

Global Education... and Citizen Science

by Lori Pawlik, VAST President

Global education begins with curiosity and inspiration. As science people, we can understand that as many of us are driven by these two basic ideas... and add in the aspect of looking through a science lens of focus. This is the foundation behind the design of the logo for this year's Professional Development Institute. But how is global education further explained?

World Savvy is an organization that desires to prepare students for thriving futures. Many of our divisions have this phrase as part of their vision statement. World Savvy indicates that global competence refers to the skills, attitudes, and behaviors necessary to thrive in an ever-changing and complex world. The Asia Society uses a global competence matrix that identifies four domains of global competence: investigate the world, recognize perspectives, communicate ideas, and take action. Students move toward global competence when they investigate the world beyond their environment. They recognize their own

perspectives and that of others. They communicate their ideas effectively with diverse audiences. Finally, students translate their ideas into appropriate action to improve conditions.

The Center for Global Education at Asia Society partners with education leaders and institutions from the U.S., Asia, and around the world in educating the next generation for employability and citizenship in a global era. They work to help develop global competence and advance UN Sustainable Development Goal 4.7 by helping education systems and educators prepare students to be ready for the global 21st Century.

One may ask: "What exactly are the UN Sustainable Development Goals (SDGs)?" This would be a great place to start our discussion. The United Nations developed seventeen goals in 2015 to help protect the planet and those within with an aim of a sustainable future by the year 2030.

The Sustainable Development Goals: a lens for Social Responsibility

There are some people in the US who know about these goals and have been working toward educating others. But... others do not know about them at all. All of us are at different points.

When one reads these goals, it is easy to recognize that they were developed for a global collaboration amongst countries for goals such as to help end poverty and improve health and education while working to mitigate climate

change while preserving oceans and forests. These are lofty, worldly goals so how does a teacher start to use them? The answer lies in tweaking one of your lessons to include a global component. It could be by reading a book about your topic from the perspective of people overseas or by reaching out to a scientist outside your area or partnering with a teacher in another state. It could be by having a virtual chat with scientists or another classroom from the cultures of students within one's own classroom. It could include a "show and tell" of artifacts or stories from your travels. The key is to integrate it within your own existing content seamlessly.

There are organizations that classroom teachers can use as partners, and these can be found by googling the topic (or goal) of interest. I pondered this myself recently when working on an SDG project as a Fulbright Teacher for Global Classrooms. I wanted my classroom of physics students to look beyond their four walls. We were studying circular motion and were moving into energy – but I wanted to use a global lens. The first thoughts that I had were waterwheels and windmills - both move in circular motion and create energy. My class searched and learned about the operation of a famous waterwheel in Ireland and the awesome windmills in Holland. Each of my four physics classes saw videos of these items as working tools and pondered how each motion related to our standards of learning. I provided students with a few materials and students built their own models. They tested them with water or wind (hair dryers) and determined their circular motion and energy. Half of the room engineered windmills;



The Sustainable Development Goals: a lens for Social Responsibility / Social Responsibility and Sustainability by blogadmin is licensed under a Creative Commons Attribution CC BY 3.0

the other half waterwheels – three table groups of each. Each table group prepared one slide that included a picture of their device, data, and calculations. The three table groups of waterwheels compared their data and determined the most efficient. The windmill groups

did the same. The teams then combined their most efficient design and data slide into one PowerPoint that explained their physics work - along with an explanation of how the newer modern versions such as a hydroelectric dam and a wind turbine work – to their class. Each team member had a 'job' throughout the global exploration which included the presentation.

Finally, tying this into citizen science, my students participated as part of the climate action project and the SDGs. We shared our water/wind project with others all around the world through videos, posts, posters, a bulletin board, and of course, our project models and presentations. We participated in virtual exchanges. Then, my students branched out and completed a data project in phenology with the GLOBE North America project. They studied leaves on trees on their own and recorded when the leaves changed color and dropped.

Science is all around us, so it is easy to pick something and make it global. This teaching strategy helps develop globally competent individuals. It helps connect students to the world through investigation and recognizing their own perspective and that of others. Students are able to communicate their ideas to diverse audiences. This culminates in wanting to take action to improve their world. Using the SDGs as a springboard allows a teacher to dive in and engage students by swimming through standards with support from others around the world. Doing citizen science along the way is a bonus. I encourage YOU to take the leap toward global education. It will change your world!

Benefits of VAST Membership

Mini-grants • Social Media • Professional Development • Awards • E-notes • Networking

Your membership in VAST is your portal to resources, discounted conference rates, and connections to other science teachers in Virginia. Be sure to renew your membership so that you do not miss out on all the resources that VAST has to offer. YOU are important the VAST Science Community! Encourage your colleagues to join.

Why not gift a new colleague or your student teacher? [Membership](#)

[The Virginia Enrichment Repository for Science Educators, VERSE](#), is available to all members. It is being updated and



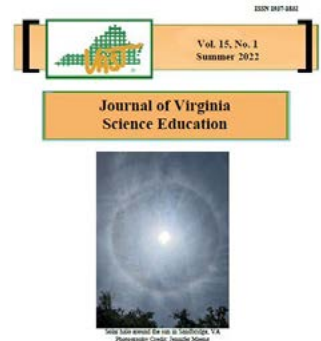
‘tagged’ with content and grade level identifiers to help target both your interest and learning. It is still draft and a work in progress. It includes content from the VAST newsletter, the Journal, and sessions from the VAST virtual and in person

Professional Development Institutes (2020-2023). **Explore VERSE by logging in to the [VAST web](#) and go to: [VERSE](#).**

[Journal of Virginia Science Education, JVSE](#), is a

peer-reviewed professional journal produced by VAST.

The principal criterion for the acceptance of a manuscript is that it contributes to strengthening the teaching and learning of science. Teachers-to-be, educators of all levels, school administrators, and informal science educators are invited to submit papers to be considered for publication.



[The Science Educator](#) is full of information on national science education news; Virginia Department of Education happenings; announcements from partnering organizations; news from VAST regions; innovative science teaching strategies; grant information; professional development opportunities, and workshops.

[Recognition In Science Education \(RISE\) Awards](#) are presented to spotlight the excellent work done by science educators across the Commonwealth. They recognize service to science education in the individual’s school, school system, and the VAST district in which they work. The awards are grouped in to twelve categories.

[Donna Sterling Exemplary Science Teaching Award](#) - Donna Sterling was a visionary science educator with a passion for working with science teachers and developing habits of inquiry-based teaching. Most recently, her leadership in the [Virginia Initiative for Science Teaching and Achievement \(VISTA\)](#) focused on teacher professional development. In 2024, the award will be given to an exemplary elementary teacher. [Link to awards.](#)



[The VAST website, VAST.org](#) contains the most recent news and updates. When VAST members login to the website they have access to [VERSE](#) and [archives of Journal](#) and [Newsletter](#). There you may renew your VAST membership; check your membership status; and update your membership information.

[Mini-Grants](#) - As a member you are also may apply for grants to provide seed money for innovative curriculum activities. The project director must be a member of VAST, who has taught at the elementary or secondary level for a minimum of three years, and is currently employed as a teacher. Read about grants: VAST Mini-grant for Teaching, Shirley Sypolt Memorial Mini-grant in Elementary Education, TACT Chemistry Teacher’s Grant, AIPG Russ Wayland Mini Grant to Improve Teaching of Geology, on the [VAST web page](#).



From the VDOE Superintendent of Public Instruction: Dr Lisa Coona

As I visit schools across the commonwealth, I am excited to see students engaging in science as they explore the natural world and utilize the Scientific and Engineering Practices to gain an understanding of science concepts. Virginia is unique in that each community has different natural phenomena to explore; from the ocean in Virginia Beach to the mountains on the western side of the state, students can investigate science within their communities. The questions students ask about the world around them, their investigations to pursue answers to these questions, and the data collected through experimentation and observation form the basis for becoming scientifically literate citizens.

Teachers are critical to fostering a climate for scientific investigation. By creating a safe space that fosters the wondering of science, teachers create a classroom environment that allows students to become young scientists. I have been excited to see this in classrooms across the state and I am looking forward to seeing much more of the great work being done in our school divisions across the commonwealth. Thank you all for everything you do for Virginia's children.

VAST Election November 2024



Global Science Curiosity and Inspiration Begins with YOU!

Stephanie Harry, VAST Immediate Past President

This year I hope you can see yourself in a leadership role for VAST. We know you are a dedicated leader, you are already a member of VAST. It's time to step further into your leadership role with VAST by joining our Board of Directors.

Nominate someone, or yourself, for one of our open positions.

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

Vice-President: The Vice-President, as directed by the President, shall oversee all committees except the Executive Committee and Board of Directors; keep a log of meetings and activities of each committee; make the chairpersons aware of their responsibilities; remind the committee chairs of their expectations; see that the handbook is kept up to date; remind various leaders, especially new people, of their responsibilities; and advise the President as needed. The vice president shall be elected for a term of three years.

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

Nominees may fill out an electronic form at: [2024 Nomination Form](#)

Teaching is NOT Mission Impossible: The Importance of Self-Care in the Role of an Educator

By Robbie Higdon, VAST Colleges and Universities chair and Morgan Meadows, Partner Engagement Administrator: VA, MD, and DC, American College of Education

How you ever heard the following phrases?

- Don't forget to take care of yourself.
- Remember to take time for you.
- You can't pour from an empty cup.

We all know participating in self-care is important for everyone, but especially for teachers. You are giving everything you have and more. Sometimes you may even find yourself having a hard time slowing down your thoughts or stop thinking about your work all together. So how do you even begin to practice self-care as a teacher? The University of Massachusetts Global wrote an article about 5 different strategies educators can use to build in self-care habits. <https://www.umassglobal.edu/news-and-events/blog/self-care-for-teachers>

While all 5 habits are beneficial, it is also important to start small. Habits take time to build so I would suggest you start with one of the suggestions and complete it 2 times a week. Make a timer for yourself or add on to a habit you have already built into your day like brushing your teeth. Once you feel comfortable with that add in another day. Before you know it, your mind will begin to naturally complete the habit creating a healthier and happier you. Let's dive a bit deeper into each of the strategies and ways you could add them into your day-to-day schedule.

1. Mindfulness

This activity makes you take a conscious break from the day. You will focus on your breathing and sometimes use visualizations to calm your thoughts allowing your brain the opportunity to slow down and take a break. You can find a variety of options and lengths by searching mindfulness activities online. These activities are also great and quick things to add into your lunch break or planning. You can even add it into your lessons with students if approved by your administration.

2. Sleep

This is easier said than done. Your body needs a proper amount of sleep to focus correctly. Without it, you can also cause your present symptoms of anxiety to increase. Some helpful tools to try include changing the settings on your phone to have a wind-down time or turn off apps at chosen time of night. You can also use a mindfulness activity to help you begin to relax and drift off to sleep.

3. Movement

It is hard sometimes to notice the effects of stress on your body. Is your jaw tense right now as you read this? Taking a step back to focus on your body with movement is way to get your mind off your career and back to you. Movement can be as simple as a 10-minute walk. A way to incorporate this activity into your workday could be to walk around the playground during recess. The article also mentions of walk and talk activity with colleagues to build in some extra movement throughout the day.

4. Work-life balance

Work as an educator can be all consuming especially for our teachers in years 1-5. However, you will burn out if you don't set boundaries for yourself. Some boundaries include not to look at emails after a certain time or leaving school early once a week. Please also know that it is ok for boundaries to change depending on your role, the year, and phase of life that you are in. Yes, our students need us, but not to the point that our physical and mental health is affected.

5. Reach out for help

You are never alone in your journey, but sometimes it is easy to forget that in the day-to-day grind. If you ever find yourself overwhelmed and so stressed that your overall health including eating and sleeping is affected, please reach out for help. Talking to loved ones, religious leaders, or a therapist doesn't make you weak. It means you are prioritizing your own health. Remember to start small. We want you to build strong habits so you can bring a happy and healthy you to the classroom!

2024 VAST PDI - Concurrent Session Presentation Proposal Form

2024 VAST PDI, November 14-16, DoubleTree by Hilton, Williamsburg

Concurrent session presentation proposals for the 2024 VAST Professional Development Institute are due by June 15. Late proposals will be considered on a space-available basis. Presenters will be notified regarding their proposals by JULY 15. Up to four presenters per presentation will be listed in the program.

Presenters WHO DO NOT register for the PDI and WHO DO NOT pay by September 16 will be dropped from the program. This includes presenters 1 through 4.

The day and time schedule for presentations will be posted in early October.

Note: Commercial and non-profit exhibitors pay the standard exhibit fee and pay \$150.00 per concurrent session presentation. Commercial and non-profit presenters who register for a booth and submit the presentation proposal form by June 15 receive one free presentation per booth purchased.

You should receive an acknowledgment if this form is successfully submitted.
QUESTIONS: Contact John Kowalski at pdi@vast.org

[Link to electronic presenter form.](#)



Plan to be there!!

Colonial
Connections

Busch Gardens
CHRISTMAS
TOWN™

During the 2024 PDI, we will have an evening @ Busch Gardens-Christmas Town on the evening of Friday November 15th, 2024. The value of this event is a \$100.00, but VAST PDI attendee's tickets are only \$11.00. The ticket includes hors d'oeuvres, two drink tickets, parking and admission to Christmas Town for VAST PDI Attendees. Purchase tickets for Busch Gardens when you register for the PDI. Deadline is Oct. 31.



Virginia Association of Science Teachers

2024 Professional Development Institute (PDI)

Williamsburg, VA

Schedule At a Glance

(Draft: 02-26-2024)

Global CSI: Curiosity. Science. Inspiration

Wednesday November 13, 2024

5:45 PM – 6:45 PM PDI Committee Dinner and Meeting

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

Thursday November 14, 2024 CURIOSITY

Ticketed Donna Sterling Institute (separate registration and fee from the PDI)

Title: TBA

7:30 AM Continental Breakfast and Check in (location TBA)

8:00 AM – 4:00 PM Sterling Institute Presentations and Lunch

9:00 AM – 5:00 PM Discounted ticket: **Colonial Williamsburg self-guided tour** for PDI attendees and family

(Purchase tickets when you register for the PDI. Deadline is October 31.)

(Pickup your ticket near the VAST Registration Desk beginning at 9:00 AM.)

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

5:00 PM – 6:00 PM Ticketed Dinner/Buffer (location TBA) (Purchase tickets when you register for the PDI. Deadline is October 31.)

6:15 PM – 7:45 PM General Session I, Welcome to the PDI, Awards and Recognitions (Auditorium, first floor)

Sponsored by: TBA (Door Prizes Giveaway)

7:45 PM – 9:30 PM **Night with the Exhibitors** (Ballroom, First floor)

Sponsored by: WorldStrides

Friday November 15, 2024 SCIENCE

7:15 AM – 4:30 PM PDI Registration Desk Open

7:30 AM – 8:30 AM Continental Breakfast in the Exhibit Hall

7:30 AM – 10:30 AM Exhibit Hall Open

8:30 AM – 9:15 AM Concurrent Session 1 Breakout Presentations;ons

9:30 AM – 10:15 AM Concurrent Session 2 Breakout Presentation;ons

10:30 AM – 11:30 AM **General Session II and Business Meeting** (Auditorium, first floor)

Speaker: Dr. Carol O'Donnell, Director, Smithsonian Science Education Center, Washington, DC

Title: **Transforming K-12 Science Education Through Innovation, Inclusion, and Sustainable Development**

Sponsored by: TBA (Door Prizes Giveaway)

11:45 AM – 12:45 PM Ticketed Buffet Lunch (location TBA) (Purchase tickets when you register for the PDI. Deadline is October 31.)

12:30 PM – 4:15 PM Exhibit Hall Open

1:00 PM – 1:45 PM Concurrent Session 3 Breakout Presentations

2:00 PM – 2:45 PM Concurrent Session 4 Breakout Presentations

3:00 PM – 3:45 PM Concurrent Session 5 Breakout Presentations

5:00 PM – Travel on your own to Busch Gardens, free parking is available

5:30 PM – 10:00 PM: Ticketed Evening at Busch Gardens (Purchase tickets when you register for the PDI. Deadline is October 31.)

Saturday November 16, 2024 INSPIRATION

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 – 10:30 AM Concurrent Session 6 Breakout Presentations

10:45 AM – 11:30 AM Concurrent Session 7 Breakout Presentation;ons

11:45 AM – 12:30 PM Concurrent Session 8 Breakout Presentations

12:30 PM – 12:45 PM Ticketed box lunch pick-up (Purchase tickets when you register for the PDI. Deadline is October 31.)

12:45 PM – 1:45 PM **General Session III and Meet Your VAST Officers** (Auditorium, first floor)

Speaker: George Hademenos, Richardson High School in Richardson, Texas

“Empowering Students to Make a Grade (and a Difference) in the STEM Classroom:

The W5 + H of my Experience as a Global Educator”

Sponsored by: TBA

(Door Prizes Giveaway)

General Sessions Speakers for the PDI

Virginia Association of Science Teachers
2024 Professional Development Institute

More Information will be in the May Newsletter



General Session II
Friday, November 15, 10:30 AM



Dr. Carol O'Donnell, Smithsonian Science Education Center
“Transforming K-12 Science Education Through Innovation, Inclusion, and Sustainable Development”

General Session III
Saturday, November 16, 12:45 PM



Dr. George Hademenos, Richardson High School in Richardson, Texas
“Empowering Students to Make a Grade (and a Difference) in the STEM Classroom: The W5 + H of my Experience as a Global Educator”

This article is repeated because the time to plan for November's PDI is NOW.

Looking for Ways to Solve the Financial Challenge of Attending VAST Eric Rhoades, VAST President-elect and Advocacy Chair

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.

Eric Rhoades

Eric Rhoades, a long time VAST board member, has served as Secondary Science Educational Specialist for Henrico County, Director of Curriculum and Instruction for Richmond Public Schools, Director for Science and Health Education for VDOE, and Director for the Virginia Initiative for Science Teaching and Achievement at George Mason University.

VAST Volunteers: The Heartbeat of PDI Success

Dear Virginia Association of Science Teachers,

As we gear up for the 2024 VAST Professional Development Institute (PDI), I invite you to join us as a VAST volunteer to make this event a resounding success! Under the theme “Global CSI: Curiosity. Science. Inspiration,” we are calling on our dedicated members to take an active role in shaping the PDI experience for all attendees.

Volunteering is a fantastic opportunity to not only support your fellow VAST members, but also to enhance your own PDI experience. There are various roles available, including registering members, collecting session tickets, assisting in the exhibit hall, and guiding attendees to their sessions. Whether you can spare just 90 minutes or more, your contribution is invaluable and greatly appreciated.

By volunteering, you’ll have the chance to network with colleagues, gain new insights, and be part of a community dedicated to advancing science education in Virginia. Together, we can make this PDI an unforgettable event!

Join us as a VAST volunteer and be a part of the driving force behind the PDI’s success. Your help is not just appreciated; it’s essential!

Please contact me directly at president.elect@vast.org if you are interested and would like to sign up now. More information will be included in future VAST newsletters. Thank you for your continued support, and I look forward to hearing from you!

Sincerely,

Eric Rhoades - President-Elect, VAST Volunteer Coordinator

2024 VAST Professional Development Institute

“Global CSI: Curiosity, Science, Inspiration”

November 14, 15, 16, 2024

Complete information about the 2024 VAST hotel can be found on the [Annual PDI page](#). Click on Hotel Information, Prices, Online Reservation Form, WiFi, Menus, and Parking.

The link to access the 2024 VAST PDI Double Tree reservation page is active.

Hotel Room rate: \$118.00
+ 12% tax (\$14.16) +
\$2.00 occupancy fee
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up or down in August from this estimation.)
Check for updates on the VAST website.

To register for hotel: VAST
Hotel Reservation Link
All reservations need to be
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Be sure to check the VAST
Website for updates and
over-flow hotels if they are
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the PDI, the hotel floor
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Go to the VAST Annual
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information.

SCIENCE FOR ALL
George Dewey

Obligations and Rights

We have a powerful potential in our youth, and we must have the courage to change old ideas and practices so that we may direct their power toward good ends.

— Mary McLeod Bethune

I tire so of hearing people say,
Let things take their course.
Tomorrow is another day.
I do not need my freedom when I'm dead.
I cannot live on tomorrow's bread.

— Langston Hughes

Change will not come if we wait for some other person of some other time. We are the ones we've been waiting for. We are the change that we seek.

— Barack Obama.

Somewhere near Brandywine, Pennsylvania, intersecting Route 1, I spotted a street sign proclaiming:

INDEPENDENT WAY
NO OUTLET



Sometime afterwards, here in Virginia, another street sign read:

SILENT WAY
DEAD END



Whether the way leads to a network of roads with no other exit or to a single road ending in a cul-de-sac, one is left to ponder the outcomes of independence and silence. Something about us longs for varying degrees of independence either in governance or in education; we have independent schools and public schools, each under the oversight of some form of trusteeship. Some form of regulation or control is needed, it seems. Yet once the independent way is chosen, there is a common commitment regardless of the complexity of the network through which we travel; but silence is not an option.

To begin with, Mary McLeod Bethune reminds us of the courage required in our commitment to directing the powerful potential in our young persons toward the benefit not only to themselves, but toward others in their community, local or global. She was herself a giant when it comes to foresight and perseverance – a powerful sense of **obligation**. Advisor to four presidents (Coolidge, Hoover, Franklin Roosevelt, Truman), she founded her own school in Florida for Black girls (now Bethune-Cookman

University), and served as one of three NAACP delegates to the 1945 San Francisco conference to draft the United Nations Charter.

Langston Hughes adds the timing element (“Let things take their course”) and reminds us that our obligations are not some vague set of ideals for the future, but are meant to us **now**. “Now, now,” some might say, “we don’t want to rock the boat.” But unless the boat **is** rocked, we will not be warned that storms ahead may lead to extended suffering, thus abrogating our obligations to our neighbors in present time or in future times. As Franklin Roosevelt once said, “The test of our progress is not whether we add to the abundance of those who have much, [but] it is whether we provide enough to those who have little.”

Barack Obama’s comment also addresses the importance of the timeliness of change. As we know from evolutionary history with our planet, timing is everything, yet one of the hardest elements to effect within ourselves or for our obligations toward others. What more powerful lesson is there for us as teachers, responsible for the intellectual and emotional welfare of our students? Our problems today transcend the local to encompass the global, something to which our young persons are particularly sensitive.

Richard Haass has just published his book, *The Bill of Obligations*¹ to help us all (especially teachers) address the differences between obligations and rights. He is currently president of the Council on Foreign Relations and as diplomat and policymaker has served under four presidents.

Haass feels the current near-exclusive focus on rights in our American democracy, together with the effects of



Obligations are the responsibility of many caring hands.

the resultant political polarization, goes well beyond the centuries-old debates over our “social contract.” He quotes the mid-twentieth century educator, Max Arzt, “It is not enough to talk about human rights without emphasizing human duties...Rights without duties lead to lawlessness, even as duties without rights can lead to slavery and to the abasement of individuality.”

He is careful to distinguish between obligations and requirements (“Observing the law, paying taxes, serving on juries, responding to military draft if there is one.”) For him, obligations consist of what we citizens owe one another and the country, what we should do, not what we must do, “...defined...as moral and political rather than legal commitments to be undertaken voluntarily.” For many these days, “rights” mean “I can do anything I please so long as it isn’t against the law.” As teachers and as human beings, we find ourselves living this tension between living our own lives and showing our young students a path where their rights to free expression do not jeopardize the safety or rights of others, physical, intellectual, or emotional.

We are all familiar with the pamphlets on “Students Rights and Responsibilities” which our school systems go to great lengths to prepare, disseminate, and explain to students and their families. In our county, the document is 124 pages long, including details on discrimination and harassment, digital citizenship and social media, a 6-page glossary, 4 appendices, conduct riding buses, the Virginia code, and network access. In keeping with Haass’s list of obligations, the parent section highlights student success, a caring culture, resource stewardship, and begins with the phrase, “...each parent has a duty to...” Certainly, despite all the bureaucracy, our schools bend over backwards to work with parents for the welfare of **all** our daughters and sons. My county’s SR&R lists 11 student responsibilities and 8 student rights. For some time now, I have wondered why we don’t reverse that sequence and call SR&R, Student Responsibilities and Rights to put greater emphasis upon a caring culture for **all** student success which rests on the responsibilities we all have toward one another.

Historically of course, the problem has always been with the actions of those in power and control over the rights of others, from land possession, to voting rights, to civil rights. Witness the more than two dozen amendments which follow the first set of ten in our own federal Constitution; hence, Haass’s book title: *The Bill of Obligations*. He discusses ten of them. There are major implications, if not actual duties, for us as professional educators.

BE INFORMED. We live in a sea of information, yet must

learn to avoid the Scylla and Charybdis of misinformation and disinformation along our voyage. As Haass points out, “...there are no alternative facts, just facts and misstatements.” As science teachers we might be used to this, but our students may not yet have learned that the opinions we harbor in our judgments and assessments must be based on relevant facts. In scientific methods, based on a self-correcting process of discovery, predictions and recommendations then may follow. From climate change to COVID vaccines, we need to help our students distinguish between fact and falsehood in gathering our information to ascertain our truths.

GET INVOLVED. As Haass points out that democracy cannot be a spectator sport, so are we committed to showing that the same applies to science. Sometime in my past, a good friend pointed out that “science” must be more a verb than a noun. Amid all the copious vocabulary, laws, and definitions lies our obligation to teach our students that joy of **doing** science, the process, is the key to all the gleam and glitter of the products of science. Today there is a rising distrust of scientists and what many misunderstand as the scientific process and the nature of a scientific conclusion. How many times have we heard the comment, “Oh, that’s just a theory!”? Getting involved means gaining experience in how truth is discovered. The current push for greater emphasis on civics education (see Obligation #9) is one way to get involved in our democracy; involvement increases both understanding and appreciation as well as achievement.

STAY OPEN TO COMPROMISE. This obligation is a tough one in political decision-making where the emphasis for some these days seems to be the “spoiled child” syndrome of “all or nothing.” Yet one of the underlying attributes of our democratic institutions in both government and education must be a willingness to “look out for the other guy.” If we are to promote a scientific process for finding truth, might we not need to compromise in allowing maximum and equitable participation in our lab teams, or construct our research to embody funding and opportunity to encourage maximum participation?

REMAIN CIVIL. George W. Bush once commented, “Civility is not a tactic or a sentiment; it is the determined choice of trust over cynicism, or community over chaos.” Surely in our schools as in our public discussions and debate we need to encourage the exchange of ideas with which we might not agree. In science, we look for factual and tested underpinnings to our ideas and experimental conclusions. One reason for conducting “discovery” rather than “confirmatory” lab exercises must be to encourage the

meaningful and respectful debate over interpretation of data. Although not as emotion-driven as in the political sphere, does this not lead to greater toleration and examination of differences?

REJECT VIOLENCE. Of course, lab safety and our SR&R regulations prohibit this in a literal sense. However, the deliberative approach toward those in control or power has much to offer, as seen historically with Gandhi and Martin Luther King, Jr, the difference between revolution and reform. Our school communities have suffered greatly in recent years from violent approaches by those who have felt alienated or abused. For many of us, fear for our safety has meant many changes in behaviors and visibility; in my own school, classroom doors have been replaced with new ones, 80% less glass and inside locks, plus scheduled safety drills. As our freedom has been curtailed, so has the trust and opportunity to bond with others, often affecting our students' own mental health.

VALUE NORMS. There are many traditions we value in our schools, some of which are enumerated in the "Student Rights" section of our SR&R. These include non-discriminatory behaviors, the general maintenance and promotion of the liberty to pursue a broad and unbiased education, rights to affirmation of personal identity, safe and equitable access to facilities and activities, including the "learning environment, educational materials, and extracurricular activities." The atmosphere in which this takes place is, in large part, created by the norms created by responsibilities students share in their conduct and attitudes: respect toward others, restraints on vocabulary, behavior, and dress, along with the freedom to "request social, emotional and behavioral supports when needed." Haass describes many social and regulatory norms, but others are more personal. Like our body temperature, there are mechanisms to ensure maintenance of norms, but we may also choose activities to support others less fortunate than ourselves, to tell the truth, to keep our commitments, respect authority, practice good sportsmanship. In his words, "We like to think of ourselves as a nation of laws, but the truth is that democracy requires more than laws if it is to function."

PROMOTE THE COMMON GOOD. Like following norms, promotion of social goodness helps maintain the atmosphere in which we function; a powerful idea in our schools. Equitable opportunity seems straight forward at first, but can run into serious obstacles around issues of health (smoking, vaccinations), behavior (driving, air travel), or taxation. We all want to ensure fairness in encouraging the expression of talent, yet our American sense of "rugged individualism" can easily descend into a morass of greed and selfishness. Currently [NY Times report, 13 February 2024]

a significant number of Americans are skeptical of expert advice, something which negatively affects both the value of norms and promotion of societal "good" in an equitable manner. These certainly are powerful ideas for our schools, both in what we teach and in how we teach.

RESPECT GOVERNMENT SERVICE. Only 23 states give academic credit for community service; Maryland and District of Columbia actually require it in order to receive a high school diploma. Haass explains how in our own American history the fear of a too-powerful government has become today something of a dislike of government, period. He gives several examples of the resulting fears and cynicism from both politicians and public. Tellingly, he points out that we **are** the government. Without this obligation to service, trust (the glue which binds a society together) seems in short supply. Starting with the depression-era CCC, more recently a number of government-created or supported programs exist: VISTA, Teach for America, Peace Corps, or AmeriCorps, and others. Other countries including Nigeria, Israel and several European nations mandate a short period of time for youth service, military to civilian. What better way to both experience and contribute toward an adequate, if not robust, awareness of promoting a common good?

SUPPORT THE TEACHING OF CIVICS and PUT COUNTRY FIRST. These two final obligations from Haass may seem outside the purview of teachers in the sciences. Yet, as one president put it, "Self-government relies, in the end, on governing of the self." Haass's argument for an "informed patriotism" rests, after all, upon consideration of and commitment to all of his preceding eight obligations. In the atmosphere and governance of our schools, classrooms and labs, it seems we both create and experience the result of such a commitment — and our perseverance in actually living it. Along with many others, he wants us to teach the habits of democracy. We do this by highlighting both the rights and obligations of citizenship.

Margaret Thatcher, Britain's former prime minister, once commented, "Europe was created by history, America by philosophy." Our grand experiment continues, sometimes quietly, sometimes under siege, but always with persistence. It was the poet and priest, John Donne, who once wrote, "No man is an island entire of itself; every man is a piece of the continent, a part of the main." We struggle with our human equality and inalienable rights, but today our horizons have vastly extended to global dimensions, whether conflicts between nations, or conflicts with nature as climate changes (in all senses) do

affect us **all**. Richard Haass puts it this way: "...American democracy will endure only if obligations join rights at the core of a widely shared understanding of citizenship... obligations as defined and developed here are moral, not legal, undertakings." We need to take a stand on behavior, not simply issues.

Here is what a father has written [Nicholas R, from New York, for Earthjustice]:

As my kids grow up, it's remarkable to see them grasp the interwoven nature of life... We lose this sense over time. Recently, the notion of our own precarity has made it into the news, with a renewed appreciation for the way our existence is closely linked with the survival of species such as bees... A sense of **obligation** comes with this.

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

References:

1. Haass, Richard. 2023. *The Bill of Obligations: The Ten Habits of Good Citizens*. New York, NY. Penguin Random House.

JVSE Update - March 2024

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

The spring/summer 2024 issue of JVSE will include many of the manuscripts we received last year. Authors should have received feedback and the acceptance decision.

Are you interested in becoming more involved with the journal? 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.



We encourage VAST members to consider submitting an article for our winter 2024 issue. The theme is STEM Across the Curriculum (submissions due July 31; published December 15). Manuscripts that address this theme may

include innovative lessons/activities and research on integrated STEM, or ways to address challenges that may arise when integrating and addressing STEM in our science classrooms (PreK through post-secondary).

Please visit the journal web page to read current and past issues of JVSE and review guidelines for manuscript authors and reviewers.

[Journal of Virginia Science Education, JVSE](#)



Authentic Research in the Chesapeake Bay Watershed

Heather L. Overkamp, Region II Director,
STEM Teacher @ I.C. Norcom High School, Portsmouth

Three years ago, Christopher Newport University (CNU) biology professor Rob Atkinson, a grad student and an undergrad published a dendroecology study (Doyle, Earley, Atkinson, 2021) that found salt was causing ghost forests in an already globally-threatened peatland forest type dominated by Atlantic White Cedar. Only one study ever evaluated AWC salt tolerance; several novel questions remained. In fall 2021, faculty and research-active students at CNU started collaborating with An Achievable Dream (AAD), an inner-city school in Newport News. Both groups of students were enthusiastic about their shared authentic research that addresses climate change near their community. The study included testing seedling salt tolerance. The experience led them to recruit 4 more high schools around Tidewater, in a region known as Powhatan's Dominions, including I.C. Norcom High School.

The Fear 2 Hope project was born from this, which serves as a regional model for addressing coastal resilience challenges that require science-based solutions. Each region of Virginia faces unique climate change-related challenges that are being studied at local colleges and universities. Engagement with high school science represents a new research collaboration, which build knowledge, skills, and abilities for wider STEAM workforce participation as we replace fear with rational, data-driven hope. The model is a step towards statewide engagement of high school students who will live in, and take responsibility for, environmental sustainability in a changing world. Sponsors of Fear to Hope include Dominion Energy, the Virginia Department of Environmental Quality, the Virginia Association of Wetland Professionals and the CNU Ferguson Fellowships for Community Engagement and the Office for Undergraduate Research and Creative Activities. More about Fear to Hope and April 18th can be found at <https://fear2hope.wixsite.com/fear2hope>.

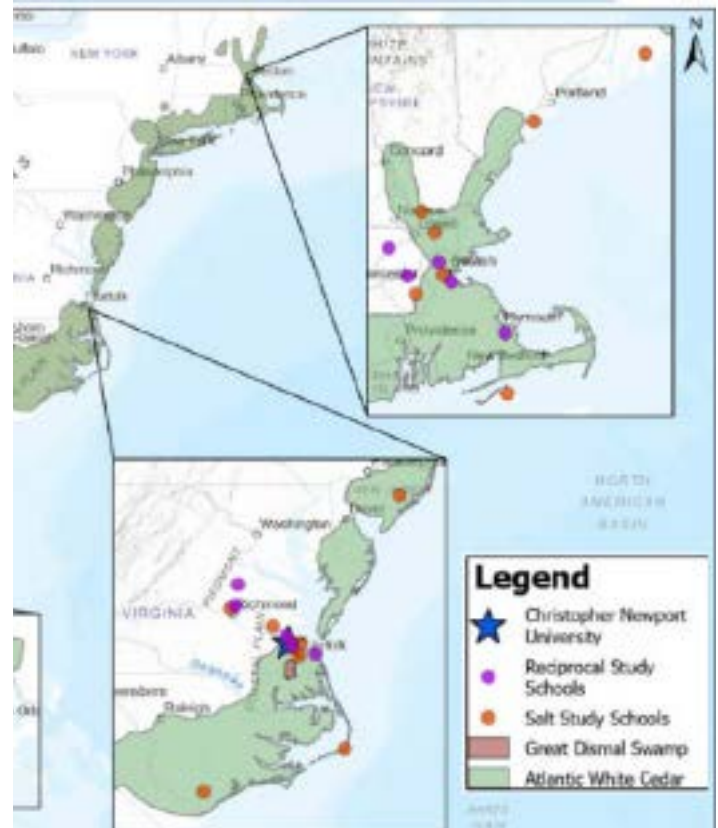
The solution to climate change and sea level rise is too daunting to solve with one tree research project, but the bigger picture of creating environmental stewards is what really matters. In addition to students learning about environmental issues and engaging in authentic research, they are also increasing their skill set: they present their research and speak with environmental professionals at CNU's annual symposium in April which brings regional

schools that have been participating together and exposes them to options in various environmental sectors. Since this is a continuing partnership that students have with CNU professors and their students, the goal is to expand each year. This is the third year of research and has expanded all over the East Coast (see map).

Students have learned about the environment in which the AWC tree lives and those environments that are still intact in our region. Through various activities in the classroom, students are also engaged in learning about climate change, its causes, effects, and mitigation strategies. Dr. Atkinson's goal of combating climate change, sea level rise, and habitat loss is through the replanting of AWC trees.

[Heather Overkamp](#)

Schools Involved in the Fear to Hope Research Project





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Three Easy Ways to Support Student Talk in Science

By Eric Rhoades, President-Elect and Jill Collins, Middle School Committee Chair

Students have a natural inclination to talk. You can walk into any classroom, and most students are talking at the beginning of class. Teachers can leverage student interest in talking for social purposes and direct it to productive discussion. Students must be active participants in their learning. This can be done through asking questions, sharing their ideas, and engaging in substantive discussions with their classmates.

Classroom discussion can accelerate how quickly students learn. It is important to have norms and utilize structures, routines, and tasks that provide a reason for productive discussions and discourse during class. [John Hattie's](#) recent research shows that the effect size for class discussion is .82 (typical effect size is .40).

But figuring out how to encourage students and drive that engagement isn't always easy. For science educators, it's essential to create and build a classroom culture where all students feel that their questions and ideas matter and also provide students with guidance in how to carry out productive conversations with their classmates.

Three ways to use student discussion and discourse and the science engineering practices to support student thinking and learning.

Modeling

There are many ways to model in the science classroom. Students can make their thinking visible by creating a model of phenomena. Teachers leverage small group instruction and frameworks to allow students to make observations and create an initial model using sketches. The initial model creation allows students to collaborate and the community to share ideas about how the phenomena “works.” This collective thinking helps to create a scientific community. The initial model will allow students to use their funds of knowledge (Vélez-Ibáñez and Greenberg, 1992) before the teacher introduces specific vocabulary and definitions.

Scaffolds are essential to support students as they learn how to create models. A simple [framework](#) gives



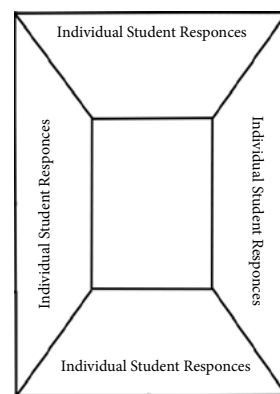
students a structure and focus for their model creation.

Students then can investigate and learn from qualitative and quantitative data and then revise their models. This revision process, described in [Ambitious Science Teaching](#), is essential for students because it allows them to change their thinking and understand that science is an iterative process.

Interpreting and Analyzing Data

Interpreting and analyzing data offers a valuable chance for students to actively collaborate and communicate. You may see students answering questions about the data or graph independently. This is a missed opportunity for collaboration and communication or discourse.

To enhance this process, incorporating various teaching strategies can be beneficial. For instance, implementing a cooperative learning approach such as a consensus placemat encourages students to formulate their own thoughts and bring them to the collective table for discussion within the group. This collaborative approach fosters a supportive environment for individual ideas and cultivates essential skills highly sought after by employers, such as effective communication and teamwork. [A consensus placement that engages students in interpreting and analyzing data](#) for the relationship between hare and lynx populations could be helpful.



Additionally, exploring teaching methods beyond the consensus placemat, such as graph annotations and peer reviews, can enrich the learning experience and help students develop well-rounded skills.

“Seeing students come out of their shells in a way I’ve never seen before was so exciting. My extroverts, who normally blurt out all the answers, were having to exercise muscles they’ve never had to use before in my room, and my introverts were able to shine in a totally new way.” *New Teacher*

Arguing From Evidence

Arguing from evidence presents another valuable opportunity for students. In this context, students can work collaboratively in small groups, mirroring the practices of scientists. Students can collectively interpret and analyze

Three Easy Ways to Support Student Talk in Science: continued

the information by utilizing the data gathered during their investigations. This collaborative approach enables them to formulate a claim, substantiate it with relevant evidence, and provide scientific reasoning for their assertions. [Speed of Sound through Different Materials CER](#) is an example of arguing from evidence that is done best in pairs or small groups of students.

Traditionally, investigations conclude with a set of independent questions that students answer on their

own. However, shifting towards a model where students collaborate, communicate, and think critically together is crucial. This aligns with the desired attributes outlined in many states' profiles of a graduate. Unfortunately, in some science classrooms, the practice involves distributing worksheets for individual work rather than fostering discussion and discourse. Exploring various teaching strategies that encourage collaborative problem-solving and group engagement is essential to better prepare students for real-world challenges.

Colonial Williamsburg



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

**Please send articles,
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