



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

ISSN 1945-7405

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# The Science Educator

Spring 2020

A Publication of VAST, The Virginia Association of Science Teachers

Vol. 68, No.4



## Virginia Association of Science Teachers Professional Development Institute

**November 12-14, 2020, DoubleTree by Hilton Hotel,  
Williamsburg, VA**

Providing learning opportunities for students to critically open their minds to the exciting world around them, is why science educators teach with passion. When science educators foster inquiry, investigation, modeling and collaboration, their students experience the phenomenon-based wonder of our natural world and STEM innovations.

What can you contribute as a presenter? Join us as a learner and educator at the 2020 VAST PDI as we focus on science content. Learn how science content, skills, and courses lead to STEM career pathways. Sessions will emphasize both the teaching and learning skills of engagement and innovative science instruction that support the 2018 Science Standards and embrace the Virginia Profile of a Graduate.



**DoubleTree by Hilton Hotel, Williamsburg, VA**  
50 Kingsmill Rd, Williamsburg, VA, US, 23185

### PDI Highlights

- In addition to theme related presentations, there will be concurrent session presentations in all subject areas for grades preK-12.
- Three general sessions will feature speakers who will challenge you with up-to-date scientific discoveries and instructional strategies.
- Exhibit hall vendors display new instructional materials and cutting-edge technologies for you to explore and many provide free samples.
- Shop for cool science themed stuff.

### PDI Links

- 2020 Online Registration & Fees for PDI attendees, presenters, exhibitors, Donna Sterling Institute  
<https://vast.wildapricot.org/Registration-Information>
- 2020 Exhibitor and Vendor Information, Prices, and Form  
<https://vast.wildapricot.org/page-18184>
- 2020 Hotel Reservation Information and Online Reservation Form  
<https://vast.wildapricot.org/page-18178>
- 2020 Concurrent Session Presenter Information and Online Proposal Submission Form  
<https://vast.wildapricot.org/page-18135>



## What is Your Compass Rose?

I'm sitting here thinking about writing an article for the newsletter. I think of all the things we do as educators. We grade papers, we contact parents, and we do everything for everyone, but what about ourselves. That is the reason for the PDI. Technology has moved so quickly that parents know their kids grades as soon as they are entered...they get an alert. We upload the schoolwork and again they get an alert. We are then quickly alerted by them no matter the day or time...they see us working in short spurts over the weekend, late at night, but have you ever been told..."**Wow, you really do work hard!** You are always there for my student and me."

November 12-14, 2020,  
DoubleTree by Hilton  
Hotel, Williamsburg, VA

The 2020 VAST  
Professional Institute  
will focus on the theme:  
"Science Content,  
Courses, and Career  
Pathways".

**Well at VAST we do...so come share with us your knowledge and let the alerts begin.**

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

## Social Media and E-notes



**Twitter:** <https://twitter.com/VaSciTeachers>



**Facebook:** <https://www.facebook.com/virginiascienceteachers/>



**LinkedIn:** <https://www.linkedin.com>

VAST Group on LinkedIn: <https://www.linkedin.com/groups/1836848>

**Enotes:** Delivered to your email mailbox with timely information for VAST members.

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## From the Desk of your President



**Michael Pratte**  
**VAST President 2020**

Greetings Teachers of Science! It seems that each year we are reminded, in profound ways, the importance of science education for all students to separate fact from fiction and better understand the phenomena that surrounds us. As we continue to crosswalk our newly revised science standards and update our curriculum resources, consider the inclusion of information and creating student experiences involving the latest in STEM careers and areas of scientific study. As we acknowledge that our students are the future scientists, doctors, technologists, explorers, and conservationists, we understand the important role that we play in preparing them for this future.

I personally take great comfort and pride in being part of the community of professional educators that work each day to shape our next generation. Virginia science educators are some of the nations most innovative and passionate teachers creating opportunities for our students to build their skills and knowledge. I challenge each of us to create relevant and skill-based investigations for our students in the remaining weeks ahead. As geological, meteorological, and biological world events provide us a plethora of connections to our content and courses, consider each question posed from your students as an opportunity to model how our scientific process helps to provide answers. What an honor for a Virginia student's name submission to be chosen by NASA for the next Mars Rover mission. Perseverance is not only a name appropriate for our continued exploration of our solar system but that of our will to continue to learn, grow, and provide opportunities for our collective students.

Our Fall PDI theme is Our Courses, Our Contents, Leading to Many Career Pathways. Please consider submitting a presentation proposal by May 1st, 2020. The submission form and additional information can be found on our [vast.org](http://vast.org) website. Are you ready to enhance your VAST membership experience? Contact any of the VAST board of directors for more information how to become more involved and open leadership roles.

Please consider VAST as your partner in learning and networking with other science educators. Contact your regional directors for information about upcoming regional activities and events and how you can contribute. Stay up to date with all events by checking our webpage [VAST.org](http://VAST.org) and become a friend on Facebook by searching for Virginia Association of Science Teachers.

Science and Experience for All.... No exceptions!

*Mike Pratte*

VAST President, 2020



## **VAST Wants You!**

### **Be a Presenter this November!**

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

### **CONCURRENT SESSIONS PRESENTER INFORMATION**

2020 Professional Development Institute

WILLIAMSBURG VA

November 12-14, 2020

**VAST needs you! Share your good ideas! Submit a concurrent session proposal for the 2020 PDI.**

#### **Before opening the presentation proposal form you will need:**

**Name, professional affiliation, email address, phone number for each presenter, if giving more than one presentation, title(s) of those other presentations**

- maximum of 4 presenters per session
- all of the above information is required for each presenter

**Presentation title**

- maximum of 60 characters and spaces

**Presentation description for the PDI program**

- maximum of 500 characters and spaces
- this is what attendees will see in the program

**Further information for the PDI committee to evaluate your presentation proposal**

- maximum of 500 characters and spaces

**[Click HERE to submit a 2020 concurrent session presentation proposal.](#)**

The online proposal submission form is open from February 20 to May 1, after May 1 contact John Kowalski ([pdi@vast.org](mailto:pdi@vast.org)) to submit a late concurrent session presentation proposal.

The PDI committee will review all proposals. Presenters will be notified by August 1 regarding their submission.

A discounted registration price is provided for up to four presenters per session who register for the PDI by September 9. It is the first presenter's responsibility to make sure all of the other presenters of their session are registered by September 9. Presenters who are not registered by September 9 will be dropped from the program unless other arrangements are made with the PDI Chair and Executive Director.

A commercial presenter must also be registered as an exhibitor and pay the \$150.00 per session fee in addition to the standard commercial exhibit fee.

A non-profit exhibitor does not pay the \$150.00 per session fee, but must be registered as a non-profit exhibitor.

**Questions: Contact John Kowalski, [pdi@vast.org](mailto:pdi@vast.org)**





# Call for Nominations for 2021 VAST Board of Directors

Are you looking for a challenging leadership position that impacts local, state, and national science education? Would you like to serve the association that serves you? The VAST Nominating Committee is currently accepting nominations from the VAST Membership who are in good standing for the following positions on the 2021 VAST Board:

**President-elect, Secretary, Regional II Director, Regional IV Director, Regional VI Director, and Regional VIII Director.** Just take a few moments to download and complete the [nomination form](#) and email to: [tfitzpatrick@rcps.info](mailto:tfitzpatrick@rcps.info)

## What is the VAST Mission?

The Virginia Association of Science Teachers (VAST) is a community of Science educators whose mission is to:

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

## Who is Eligible?

All VAST Members, in good standing (current VAST member).

*\*Please note that all officers and directors serve on a volunteer basis. Please ascertain that the colleague(s) you nominate do not express serious concerns regarding volunteer service time or have conflicting priorities.*

**Who May Nominate?** Nominations are welcome from all VAST members. Self-nominations are always encouraged!

## What Are the Position's Responsibilities? **President-elect, President, Past-President**

is a three-year commitment beginning in January 2021 through December 2023 as President-elect, Year 1; President, Year 2; and Immediate Past-President, Year 3.

The **President-elect**, shall have served on the VAST Board of Directors, will be elected for a one-year term, shall:

Serve as the Co-Chairperson of the standing Conference (PDI) Committee (working closely with the PDI Chair) for the purpose of planning, scheduling, and execution of the conference scheduled for the year of his/her term in office.

The **President**, for a one-year term following the year serving as President-Elect, shall: a.) Maintain general oversight of the interests and activities of VAST, representing VAST to the public; b.) Preside over all business meetings of the general membership of VAST, of the Executive Committee, and of the Board of Directors;

- Prior to the first Executive Committee meeting in January, nominate committee chairs, editors, Web Master, and VAST representatives to other groups, which require approval of the Executive Committee followed by Board approval;
- Prior to the first Board meeting in January, develop the annual budget in cooperation with the Treasurer and Executive Director, and develop the calendar for VAST Board meetings;
- Represent VAST at conferences of other professional organizations such as NSTA (national and regional);
- Serve on the Standing Conference Committee; and
- Perform other duties incidental to the office.

The **Immediate Past-President**, for a one term following the year serving as President, shall:

- Be available for advice and counsel to see that programs and projects are continued under the new leadership;
- Chair the nominating committee for elected offices of VAST;
- Attend (or appoint a designee to attend) the National Congress on Science Education.

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

A **Regional Director**, elected for two years, shall: (See the [Regional map](#). Find your county or the closest large city. Each Director represents one of eight geographic regions established by the Virginia Department of Education.)

- Be elected in even years if their region number is an even number and on odd years if their region number is an odd number;
- Promote membership in VAST in their region;
- Promote professional development activities in their region
- Participate actively in VAST functions, including Professional Development Institutes, publications, and awards.



## Virginia Association of Science Teachers 2020 Professional Development Institute (PDI)



**Thursday afternoon Workshops sponsored by the Virginia Department of Education**  
**Thursday, November 12**  
**3:15 pm – 5:15 pm**

Workshops are free to attendees registered for the VAST PDI.  
There is no pre-registration for the workshops, sign in beginning at 3:00 pm.

These Thursday Workshops allow the VDOE team the opportunity to share resources to support the 2018 Science Standards of Learning. These resources, specifically the Science Instructional Plans, have been created by teams of teachers and science leaders across the Commonwealth to support the integration of the Science and Engineering Practices as a means of developing student conceptual understanding of the science Standards of Learning.

**There will be individual sessions for:**

**K-2**  
**3-5**  
**6th grade/Earth Science**  
**Life Science/Biology**  
**Physical Science/Chemistry/Physics**



  
**Science**  
**MATTERS**

Using the power of media to inspire our community to  
value science and understand its importance to our future

**Educational Resources** for Teachers and Parents

**Hot Shots & Hot Jobs** in STEM fields

**Green Kids** encouraging Environmental Stewardship

**Community Events Calendar** a hub for Science Events



[ideastations.org/sciencematters](http://ideastations.org/sciencematters) •  [sciencemattersva](https://www.facebook.com/sciencemattersva)



### To the VAST membership,

At the January 2020 VAST Board meeting, the following position statements were approved. Pursuant to the approved procedures for adopting position statements, the Board now makes the statements available for your review and comment.

## The Importance of Teaching Climate Science

### Background and Introduction

According to a 19 August 2019 report in TIME magazine, July 2019 was the warmest month in Greenland since records began 139 years ago. In the same month, the largest single day's loss by volume of the Greenland ice sheet was recorded: 12.5 billion tons in 24 hours. That's the equivalent of covering the state of Virginia with a layer of ice almost 5 inches thick, or Chesapeake Bay with a 50-foot layer of ice, or a football field with a 1900-mile layer of ice!

At the 24<sup>th</sup> Conference of the Parties to the United Nations Framework Convention on Climate Change (COP24) in December 2018 at Katowice, Poland, scientists and leaders from around the world gathered to discuss the latest scientific underpinnings of the anthropogenic causes of global climate change. Just prior to that meeting, the UN's Intergovernmental Panel on Climate Change (IPCC) and the US government's 4<sup>th</sup> national Climate Assessment report addressed the impacts, risks, and adaptations needed in order to respond to the present and projected impacts of global climate change. Although the IPCC has been issuing reports since 1990, the National Climate Assessment's recent volume included input from 13 agencies and 300 scientists plus an extensive public comment review by the National Academy of Sciences. As a report in the *Christian Science Monitor* [4 December 2018] pointed out, such gatherings and reports are show-case examples of the nature of "uncertainty" in science (data variability), the role of critical thinking and analysis, and the influence of misconceptions and disinformation in the political decision-making process. These are key intellectual processes which science teachers at all levels prioritize for our students.

As an organization of, by, and for science educators, the Virginia Association of Science Teachers (VAST) maintains the necessity of strengthening the learning experiences of our K-16 student population by explicitly addressing the scientific perspective as to probable causes and impacts upon earth systems and global climate change. These are addressed in the National Academies' *A Framework for K-12 Science Education, Practices, Crosscutting Concepts, and Core Ideas (Framework)*, Sections ESS3.C and ESS3.D. Awareness of the impact of human activities upon global systems in the recent past has resulted in positive actions in greatly reducing the effects of acid rain as well as the size of the ozone hole over Antarctica.

As the *Framework* states, "recorded history as well as chemical and geological evidence, indicates that human activities in agriculture, industry, and everyday life have had major impacts on the land, rivers, ocean, and air." It is essential that students come to recognize and understand through their science education that in today's world of 7.7 billion people, environmental issues transcend local, regional, and even national boundaries to global levels of impact. There is value in addressing climate change at all levels of education as a decision-making process where analysis of complex data is involved. Such analysis is based upon geological, chemical, historical and computer projections as evidence, and includes "must issues" such as rising sea levels, ocean acidification, alternative fuels, and habitat loss. This can serve as the ultimate "real world" issue for our students which impacts the entire community of nations and must involve major international cooperation.

Many states were involved in construction and adoption of the *Next Generation Science Standards* (NGSS), 2013, and considered this issue by accepting the Framework’s Disciplinary Core Ideas in their Middle School and High School grade level bands. For example:

- Weather and Climate: MS-ESS3-5: Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.
- Human Impacts: MS-ESS3-4: Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth’s systems.
- Weather and Climate: HS-ESS2-4: Use a model to describe how variations in the flow of energy into and out of Earth’s systems result in changes in climate.
- Human Sustainability: HS-ESS3-4: Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.
- Human Sustainability: HS-ESS3-6: Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.

The teaching of climate science is also supported in the *Virginia Department of Education Science Standards* (2018), specifically in ES8, ES10, ES11, and ES12. Additionally, *VDOE Science Content Guidelines* for Environmental Science, sections IV and V address conservation issues with renewable and nonrenewable resources including the issue of environmental impact along with human impact, global climate change, and civic responsibility.

In light of these background needs and observations, VAST hereby enthusiastically endorses and adopts the National Science Teaching Association (NSTA) position statement on *The Teaching of Climate Science* (2018). This statement, together with its fifteen declarations for science teachers, and recommended support structures for administrators, school boards, school and district leaders, state and district policymakers, parents, media, and higher education professors can be found at this link:

[http://static.nsta.org/pdfs/PositionStatement\\_ClimateScience.pdf](http://static.nsta.org/pdfs/PositionStatement_ClimateScience.pdf)

NSTA’s statement includes abundant background information and resources for science teachers. As NSTA’s statement concludes, the overriding concern is based upon the fact that today’s students will be the ones making crucial decisions affecting life as we know it upon our planet’s surface. The issues with climate science also can provide the ultimate interdisciplinary experience for our students arising from collaboration with other teachers outside of the sciences.

January 2020

**VAST Members:**

The Climate Science Position Statement was accepted by the Virginia Association of Science Teachers Board of Directors at the January Board meeting. The VAST Policy Committee and the Board ask you to read the position statement, consider it, and send your comments to the chair of Policy Committee. All feedback will be considered before the Position statement is accepted.

**Please Send Your Position Statement Comments**

VAST members are invited to provide their comments, which will be considered and incorporated as deemed appropriate by the committee for this position statement. All member comments will be filed. Comments will be accepted until May 10th, 2020. To respond to this position statement, please submit them in writing to the address below:

**Email to:** George T. Dewey, Committee Chairperson, [GTDewey@fcps.edu](mailto:GTDewey@fcps.edu)

Thank you for your time and comments!





## **The Importance of Earth Science Education**

### **Background and Introduction**

The Virginia Association of Science Teachers emphasizes the importance and need for all students to have comprehensive instruction in the Earth Sciences from Kindergarten through advanced high school offerings. While also recognizing the importance of comprehensively offering content in the other three fundamental sciences of Biology, Chemistry, and Physics, Earth Science instruction uniquely blends content from all of the sciences together to address major environmental, societal, and economic problems that have always challenged the lives of everyday people. Increasingly, such instruction is even more critical due to growing problems associated with anthropogenic climate change and natural resource access and utilization. The Virginia Association of Science Teachers particularly stresses the importance of having every student take an advanced course in Earth Science as a part of their basic instructional experience.

### **Purpose**

This position statement seeks to (1) summarize the organization's collective view on the teaching of Earth Science in grades K-12; (2) address the changing landscape for this critical subject matter in the context of new learning outcomes associated with the "Profile of a Virginia Graduate"; (3) address concerns associated with replacing Earth Science instruction with less comprehensive or directly related options for students; and (4) supporting the teaching of Earth Science throughout the K-12 curriculum also keeps Virginia in line with the Next Generation Science Standards, which place Earth Science on equal footing with Biology, Chemistry, and Physics.

### **Rationale**

The significant challenges represented by human impacts on the global environment are real. As the Geological Society of America has noted in its own position statement on the importance of teaching Earth Science:

"This is a critical time for students to understand how Earth works as a system and how humans interact with Earth. Understanding the causes and potential societal consequences of natural Earth processes (e.g., earthquakes, floods, landslides, tsunamis, volcanic eruptions, weather, and global climate change) and the production, availability, and potential depletion of natural resources (e.g., water, soil, mineral, and energy) is of particular importance. These processes and resources impact our economy, our security, and the safety and sustainability of our environment. "

(Geological Society of American, 2016, [https://www.geosociety.org/documents/gsa/positions/pos4\\_TeachingEarth-Science.pdf](https://www.geosociety.org/documents/gsa/positions/pos4_TeachingEarth-Science.pdf) ).

Certainly, many of these topics and related concepts can be and are addressed in other science courses, including particularly Environmental Science, deciphering the foundation of the relevant processes that lead to a deeper understanding of our current reality requires that students are exposed to the records of our Earth's past. A holistic understanding of the history of the Earth's biosphere, hydrosphere, geosphere, atmosphere, and its exospheric origins and connections provides the fundamental foundation upon which good decisions can be made about personal lifestyle choices, public infrastructure, and legislative policy in the present and in light of our future as Virginians and as a species.

The Earth Sciences provide a very approachable and relevant opportunity for students to apply knowledge from other areas of science to solve problems and to develop skills in reasoning, data manipulation and interpretation, modeling, and in dealing with the scope of time. Such skills are critical in all areas of life and so are transferable directly to everything from advanced academic work to CTE careers. Our lives constantly interact with the Earth and its processes and these interactions significantly affect what happens in related non-anthropogenic systems. Technicians in the trades benefit immensely from knowledge about bedrock geology, the behavior of the atmosphere, river and stream behavior, groundwater movement, and many other areas where such knowledge leads to good personal and public decision-making. Such exposure also gives people the scientific depth and rigor to pursue advanced academic field and lab studies that provide the research results that help us better understand the world around us. The challenge of teaching and learning





## Professional Development Opportunities - Summer 2020

### News from the Virginia Department of Education

Anne M. Petersen, Ph.D.

Happy spring! Summer is around the corner and we are excited to have several free professional development opportunities available for both teachers and science leaders. These opportunities are designed to provide best instructional practices to support both elementary and secondary teachers as they begin to implement the *2018 Science Standards of Learning*. Registration information for these sessions will be sent to all science leaders and VAST members as soon as it becomes available.

**June 22-24, 2020 Deeper Learning: Supporting Elementary Science Instruction,** James Madison University Content Teaching Academy (multi-day event, lodging provided). Grade level specific professional learning opportunities will be provided. The Kindergarten through third grade band will focus on the integration of science and literacy in developing meaningful classroom experiences to support science conceptual understanding. Fourth grade teachers will focus on integration of science and social studies concepts, and the fifth grade band will focus on new content in the standards and building Deeper Learning through concept development.

**June 22-24, 2020 Secondary Science PD at Virginia Tech.** The focus of these professional learning opportunities will be on teaching science for understanding in the secondary classroom, the effective use of modeling within different science disciplines, and on the meaningful integration of mathematics to support science concepts. Participants may attend one or more of the training days. If a participant plans to participate in multiple events, food and lodging will be provided. Funding for the training and lodging is provided through Virginia Tech.

**June 25-26, 2020 Content Teaching Academy: Biology for All!** This two day event is for biology teachers who have the opportunity to work with special education students and students who may need differentiated instruction. Sessions will include both a focus on the *2018 Biology Standards of Learning* and on techniques and strategies appropriate for different learners in the co-taught classroom. The CTA: Biology for All! professional learning opportunity will be held at James Madison University. Food and lodging will be provided.

**June 25-26, 2020 Content Teaching Academy: Integrating the Computer Science into K-8 Instruction.** This professional learning opportunity will support teachers in understanding the computer science content, to include an introduction to programming, and help teachers recognize best fits for cross curricular instruction and the *2017 Computer Science Standards of Learning*. Food and lodging for this session will be provided to all participants.

#### AWARDS and GRANTS

Now is the time to nominate a colleague for a VAST Award or to apply for a Mini-grant.

Are you looking for funding for special project for your students. VAST Mini-grant are awarded every year. The purpose of the VAST Mini-grant program is to provide seed money for innovative curriculum activities which expand learning opportunities for science students. To find out more go to:

Awards: <https://vast.wildapricot.org/Awards>

Mini-grants: <https://vast.wildapricot.org/Grants>



## Donata the Dragonfly Explores Pleasure House Point - Spring 2020

Donata flies low along the warming spring sand as fish jump and children squeal at the edge of the majestic Chesapeake Bay. People snap colorful cloths across the sand to mark their space on the beach. Brightly colored umbrellas and sand toys contrast the muted grains and just-greening American Beach grass as she weaves casually and bobs on the currents of air towards her concrete landmark, the Lesner Bridge. She is excited to soon be joining her friends for the annual *Spring Gathering of Dragonflies* at Pleasure House Point Natural Area, preserved by the City of Virginia Beach.

She pauses noticing a change in her landmark. The Lesner Bridge is bright, towering above the mouth of the Lynnhaven River. Cars whiz by below as she flies high to the top of the new bridge. Her compound eyes are dazzled by “the Canoes,” a beautiful sculpture that embraces the history of the region and acts to welcome visitors and residents to the local beaches.

Seeing her destination beyond the bridge, Donata happily twists and turns as the breeze pushes her high above the sparkling Lynnhaven River and towards the wetland fringes of her meeting place. Below her, Crab Creek is decorated with red, blue and yellow kayaks slowly paddling out towards the Lynnhaven Bay.

Playfully darting between the slowly rotating blades of the Brock Environmental Center’s turbine, Donata marvels at the building below her. The gracefully curved architecture of the Brock Environmental Center, Hampton Roads Headquarters for the Chesapeake Bay Foundation (CBF), seems naturally placed among the swaying grasses and gentle waves against the shoreline. Donata has seen this building every year since it was built in 2014.

She still loves to visit, impressed with its unique standing as one of the few *Living Buildings* in the United States. This unique office building operates completely “off the grid,” providing all its power through two wind turbines and solar panels. Geothermal heating keeps it warm in the winter and rainwater is captured from its roof and carefully cleansed through a UV filtration system for daily



use. Locally sourced materials and smart, comfortable design truly make this a wonder.

Darting in and around the Brock Environmental Center (BEC), Donata does not find her friends. “I must be early,” she thinks and happily continues to explore her surroundings. People underneath Brock are busily counting oyster “spat” on shells they have received from a Community Science project. Spat are baby oysters that have settled permanently on a hard surface to grow for their adult life. Donata knows that studies like this are an important part of restoring the oyster population in the Chesapeake Bay system.

Donata darts down and looks at the focused, muddy people. They smile, happy for her interest. She can tell by their clothing that they work with Lynnhaven River Now (LRNow), a local, non-profit waterway group in Virginia Beach who, for almost 20 years, have cleaned up the waters across the city. LRNow has offices in the BEC which is located on their home river, the Lynnhaven. This organization, along with their CBF partners and state agencies, will have restored over 90 acres of oyster reef by the end of the summer.

LRNow engages the people of Virginia Beach in all aspects of their work. The organization identifies pollutants and works to stop or remove them, restores vital habitats such as trees, oyster reefs and tidal shorelines, educates and



Photo: Staff - Lynnhaven River Now



engages Virginia Beach students, businesses, faith communities, and neighborhoods, and advocates for common sense legislation that protects our valuable, natural resources.

She glides toward the shoreline on a warm layer of air hearing the crescendoed-call of an early osprey looking for a mate. Some of her friends are playing among the fresh, bright green tips of the cordgrass islands. She joins them. Playing, dipping and darting in a game of tag, the dragonflies wait for more to gather. There are natural oysters squirting, exposed along the mud flats. The cack, cack, cack, cack, cack of the elusive Virginia rail fills the air and fish leap in the shallows.

As she and her friends dip and swirl through bright green Spartina grasses along the fringe marsh of Pleasure House Point, Donta sees people enjoying the maritime forest and beautiful tidal marshes around them. The trails through Pleasure House Point Natural area, once destined to be filled with condominiums until the City of Virginia Beach saved the parcel, are a gift for both human and dragonfly alike.

The *Gathering of Dragonflies* is beginning. Hurrying to join her friends and family, Donta's body is filled with joy knowing Lynnhaven River Now, the City of Virginia Beach, and the Chesapeake Bay Foundation, are working

so hard to protect these wild places.

For more information about Pleasure House Point Natural area, visit the City of Virginia Beach at [www.vbgov.com](http://www.vbgov.com).

For more information on Lynnhaven River Now, visit [www.LRNow.org](http://www.LRNow.org). For more information on the Brock Environmental Center, visit [www.cbf.org](http://www.cbf.org).



Photo: Staff - Lynnhaven River Now

Written for *Donta the Dragonfly* by Helen W. Kuhns, Assistant Director & Programs Coordinator, Lynnhaven River Now, Brock Environmental Center, 3663 Marlin Bay Dr., Virginia Beach, VA 23455. Helen can be reached at [helen@LRNow.org](mailto:helen@LRNow.org) or by calling 757-962-5398.



CHESAPEAKE BAY FOUNDATION  
Saving a National Treasure



Photo: Erica Park – Chesapeake Bay Foundation



Photo: Staff - Lynnhaven River Now

**Cindy Duncan • Chesapeake Bay Foundation**  
Teacher Professional Learning Coordinator VA and DC  
VAST Chair of Environmental Literacy [cduncan@cbf.org](mailto:cduncan@cbf.org)



## Dim Delights in Cancer

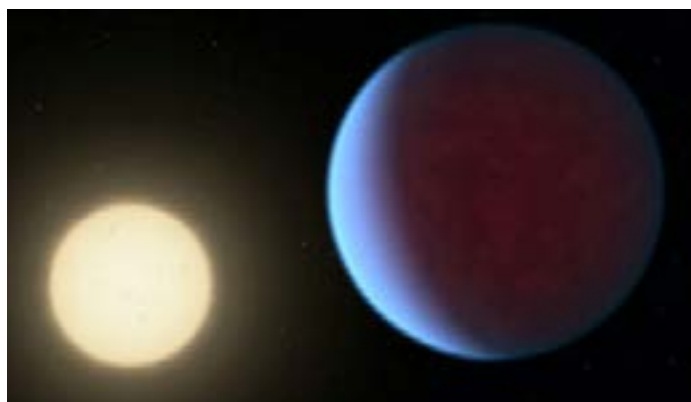
### David Prosper

Cancer the Crab is a dim constellation, yet it contains one of the most beautiful and easy-to-spot star clusters in our sky: the Beehive Cluster. Cancer also possesses one of the most studied exoplanets: the superhot super-Earth, 55 Cancri e.

Find Cancer's dim stars by looking in between the brighter neighboring constellations of Gemini and Leo. Don't get frustrated if you can't find it at first, since Cancer isn't easily visible from moderately light polluted areas. Once you find Cancer, look for its most famous deep-sky object: the Beehive Cluster! It's a large open cluster of young stars, three times larger than our Moon in the sky. The Beehive is visible to unaided eyes under good sky conditions as a faint cloudy patch, but is stunning when viewed through binoculars or a wide-field telescope. It was one of the earliest deep-sky objects noticed by ancient astronomers, and so the Beehive has many other names, including Praesepe, Nubulum, M44, the Ghost, and Jishi qi. Take a look at it on a clear night through binoculars. Do these stars look like a hive of buzzing bees? Or do you see something else? There's no wrong answer, since this large star cluster has intrigued imaginative observers for thousands of years.

55 Cancri is a nearby binary star system, about 41 light years from us and faintly visible under excellent dark sky conditions. The larger star is orbited by at least five planets including 55 Cancri e, (a.k.a. Janssen, named after one of the first telescope makers). Janssen is a "super-earth," a large rocky world 8 times the mass of our Earth, and orbits its star every 18 hours, giving it one of the shortest years of all known planets! Janssen was the first exoplanet to have its atmosphere successfully analyzed. Both the Hubble and recently-retired Spitzer space telescopes confirmed that the hot world is enveloped by an atmosphere of helium and hydrogen with traces of hydrogen cyanide: not a likely place to find life, especially since the surface is probably scorching hot rock. The NASA Exoplanet Catalog has more details about this and many other exoplanets at [bit.ly/nasa55cancrie](http://bit.ly/nasa55cancrie).

How do astronomers find planets around other star systems? The Night Sky Network's "How We Find Planets" activity helps demonstrate both the transit and wobble methods of exoplanet detection: [bit.ly/findplanets](http://bit.ly/findplanets). Notably, 55 Cancri e was discovered via the wobble method in 2004, and then the transit method confirmed the planet's orbital period in 2011!



Artist concept of 55 Cancri e orbiting its nearby host star. Find details from the Spitzer Space Telescope's close study of its atmosphere at: [bit.ly/spitzer55cancrie](http://bit.ly/spitzer55cancrie) and the Hubble Space Telescope's observations at [bit.ly/hubble55cancrie](http://bit.ly/hubble55cancrie)

Credit: NASA/JPL-Caltech



Look for Cancer in between the "Sickle" or "Question Mark" of Leo and the bright twin stars of Gemini. You can't see the planets around 55 Cancri, but if skies are dark enough you can see the star itself. Can you see the Beehive Cluster?

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Want to learn more about exoplanets? Get the latest NASA news about worlds beyond our solar system at [nasa.gov](http://nasa.gov).

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This article distributed by NASA Night Sky Network  
Visit [nightsky.jpl.nasa.gov](http://nightsky.jpl.nasa.gov) to find local clubs, events, and more.

## Secondary Teachers (6-12): Apply for the 2020 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 elementary and secondary teacher professional development. This award recognizes that exemplary teachers engage in continuous improvement, and is designed to support a professional development plan for the improvement of science teaching. In 2020, the award will be given to an exemplary secondary teacher. **For the secondary award the 6th grade teacher must be teaching in a secondary setting. The award alternates between elementary and middle/secondary.**

The awardee will receive a total of **\$4000**. In addition, travel costs will be reimbursed to attend the 2020 VAST PDI to receive the award and to the 2021 VAST PDI to present a session on the professional development experience and outcomes. The awardee will receive \$3000 at the VAST PDI in 2020. The remainder will be awarded after the awardee presents at the next VAST PDI and also submits an article to either the newsletter *The Science Educator* or the *Journal of Virginia Science Education*.

### Deadline for applications: July 15, 2020

#### To apply:

1. In your cover letter, include information on yourself, including your preferred name, your home and school addresses, and phone numbers and email address(es) where you can be reached. Tell us how many years you have taught, where, and what grade levels.
2. In no more than two pages, single-spaced, **describe an inquiry-based science unit** that you taught. Describe how your unit is student-centered and includes community engagement. Give evidence that the unit was effective. Evidence documents such as student work can be submitted separately, and will not count toward the two-page limit.
3. In no more than two pages, single-spaced, **describe your plan for professional development**, using the funds received through the Sterling award. These plans may include summer courses, attendance at workshops, study abroad opportunities, instructional materials development under the guidance of experts on-site, etc. Feel free to be creative in your plan. Submit the professional development

description with anticipated outcomes, including plans for a presentation at the 2021 VAST PDI. Tell how this award will help you become a better teacher of science and will support the development of leadership skills. Tell about your plans for writing an article about your experiences.

4. Submit **three letters of recommendation** based on direct observations of teaching. One letter must be from the science supervisor or someone serving in that capacity, a second letter must be from the principal, assistant principal, or instructional leader, and a third letter must be from a fellow teacher or a parent. Letters should address the following: Why is this teacher a good candidate for this award? What qualities do they exhibit as teachers that make the recommender think they will use the funds from the award to improve their practice as teachers of science?

All materials must be submitted by 5 pm on July 15, 2020.

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



# Chesapeake Bay Foundation

## Student Leadership Summer Expeditions

Hike, fish, wade, sail, seine, and paddle in some of the most beautiful and inspiring natural areas of the Chesapeake watershed, all while learning how to be an effective advocate for the world around you!



### Summer 2020 Virginia Expeditions:

#### June 22-26: Tracing Tributaries – The James

Camp and paddle all week to explore the ecosystems, history, culture, and land management strategies of the James River watershed. Together, we will investigate how the health of the James River and the small creeks and streams that feed into it, impact the health of the Bay downstream.

#### July 18-25: Saving Our National Treasure

*SL Masterclass open to students from PA, MD, & VA*

Join a multistate coalition of student leaders as we discover the importance of working together to Save the Bay! Explore each state capital by foot, boat, and canoe to meet with local leaders and restoration experts. Develop your leadership skills and knowledge about how to effectively protect and restore clean water.

#### August 3-7: Changing the way we look at Climate Change

Investigate how the changing climate is impacting the environment and all the life that calls Virginia home. Explore the western shore of the Chesapeake Bay and travel to Port Isobel, CBF's Island Environmental Education Center, right of the coast of Tangier Island. Sail away with a plan to create positive environmental change, encourage stewardship, foster environmental literacy in your community!



#### ELIGIBILITY:

Student applicants must be:

- Entering 9th-12th grades for the 2020-2021 academic year
- Active in either student government, FFA chapter, school eco-club, or environmental organization

**COST:** \$100 per student

#### APPLICATION PROCESS:

Apply online through March 31<sup>st</sup> at [cbf.org/SLsummer-apply](https://cbf.org/SLsummer-apply)

**QUESTIONS?** Contact us at [SLCoordinator@cbf.org](mailto:SLCoordinator@cbf.org)

**For more information, visit**  
[cbf.org/SLsummer](https://cbf.org/SLsummer).



**Student Leadership: Advancing Advocacy, Action, and Awareness**  
**Learn More at [cbf.org/studentleadership](https://cbf.org/studentleadership)**



## Elementary Teachers:

### Call for Participation

We are seeking elementary teachers of science and/or mathematics (grades 2-5) who are willing to share their professional learning journeys through an online google survey and video focus groups.

Time frame: End of May to early June, 2020.

If you are interested, please complete the google survey link:

<https://forms.gle/H7adNdSbHMqXyLfs9>

Or contact: Dr. Cheryl Lindeman, Assistant Professor of Education, Randolph College  
434.947.8324 or [clindeman@randolphcollege.edu](mailto:clindeman@randolphcollege.edu)

Our research “Deeper Learning: How do elementary mathematics and science teachers acquire strategies and content knowledge to promote student success?” is one of the 2020 undergraduate/faculty projects for the Randolph College Summer Research Program.

We look forward to sharing our findings at the VAST PDI!



RANDOLPH COLLEGE

2500 RIVERHUNT AVENUE • LENOIR, VIRGINIA 24601  
[www.randolphcollege.edu](http://www.randolphcollege.edu)

*Founded as Randolph-Macon Women's College in 1891*

## FDA Professional Development Program in Food Science

FDA Professional Development Program in Food Science  
The following is information about a wonderful, fully funded, professional development opportunity for teachers.

Foodborne disease outbreaks and food recalls frequent the news. What organisms cause these diseases? What can an individual do to protect themselves from these diseases? What measures are being taken by the federal government to prevent transmission of these diseases?

Teachers have an opportunity to provide inquiry-based lessons related to these outbreaks, recalls, and nutrition. Lessons can be found in the curriculum Science and Our Food Supply developed jointly by FDA and NSTA. And, in order to prepare teachers to use these lessons, FDA provides a free multidimensional professional development program that will take place July 12 - 18, 2020 in Washington, DC. Included in the program is transportation to and from Washington and all housing and meal expenses.

During the program, the selected teachers will participate

in activities such as the following - meet with FDA and USDA scientists to learn about their current research on foodborne diseases and nutrition; work with instructors to learn proper techniques to use in doing all the labs with their own students; and, tour USDA's farm in Beltsville, MD.

Selected teachers are asked to implement the supplemental curriculum in their classrooms during the 2020 - 2021 school year and to do a hands-on workshop on the curriculum for other teachers.

To apply on line – deadline April 24, 2020- go to: <http://www.teachfoodscience.org/apply.asp>

The Science and Our Food Supply curriculum guides on which the summer program is based are available from this website - [https://www.fda.gov/food/students-teachers/science-and-our-food-supply#food\\_safety](https://www.fda.gov/food/students-teachers/science-and-our-food-supply#food_safety). We strongly suggest you review these guides before applying for the summer workshop.

For more information, contact Mimi Cooper, FDA Summer Program Facilitator, at [mimcooper63@gmail.com](mailto:mimcooper63@gmail.com)



**Question your world.**



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

Special thanks to our premier partners:



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### VAST Regional Directors:

#### Is Your Address Changing?

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

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*Mission of the Virginia Association of Science Teachers (VAST) is a community of Science educators whose mission is to:*



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

**Please send articles,  
letters to the editor, or labs by the submission deadline, MAY 1, 2020,  
for inclusion in the next Newsletter.**

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

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