Promoting Science Excellence Since 1952

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Excellence in Science Education Through Innovation

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The Science Educator

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Presidential Awards for Excellence in Mathematics and Science Teaching
Congratulations Barbara-Ann Adcock and Camilla Walck
Virginia National Finalists

Virginia National Finalist 2014- Grades K-6 Award
Barbara-Ann Adcock, Pocahontas Elementary School, Science

Virginia National Finalist 2015 - Grades 7-12 Award
Camilla Walck, Princess Anne High School, Science

This August, President Obama named 213 mathematics and science teachers as recipients of the prestigious Presidential Award for Excellence in Mathematics and Science Teaching. These awardees represent all 50 states, the District of Columbia, Puerto Rico, U.S. Territories, and the Department of Defense Education Activity schools. The educators will receive their awards at a ceremony in Washington, DC on September 8, 2016.

The Presidential Award for Excellence in Mathematics and Science Teaching is awarded to outstanding K-12 science and mathematics teachers from across the country. The winners are selected by a panel of distinguished scientists, mathematicians, and educators following an initial selection process at the state level. Each nomination year of the award alternates between teachers in the kindergarten through 6th grade level, and those teaching 7th through 12th grades. The cohort of awardees named today represent two nomination years, one of teachers in kindergarten through 6th grade classrooms and the other in 7th through 12th grade classrooms.

Winners of this Presidential honor receive a $10,000 award from the National Science Foundation to be used at their discretion, and are invited to Washington, DC, for an awards ceremony, as well educational and celebratory events, and visits with members of the Administration. "The recipients of this award are integral to ensuring our students are equipped with critical thinking and problem-solving skills that are vital to our Nation's success," President Obama said. "As the United States continues to lead the way in the innovation that is shaping our future, these excellent teachers are preparing students from all corners of the country with the science, technology, engineering, and mathematics skills that help keep us on the cutting-edge."

President Obama and his Administration have taken significant steps to strengthen education in science,technology, engineering, and math (STEM) fields in order to fully harness the promise our Nation's students. The President's Educate to Innovate campaign, launched in November 2009, has resulted in more than $1 billion in private investment for improving K-12 STEM education. Additionally, in 2011, the President set an ambitious goal to put 100,000 additional excellent STEM teachers in America's classrooms by 2021. Thanks to the work of more than 280 organizations, 30,000 new STEM teachers have already been trained, and resources are in place to train an additional 70,000 STEM teachers by 2021. In parallel, the President has called for increasing the proficiency of America's existing STEM teachers with a Master Teacher Corps initiative, which would identify the most effective K-12 STEM teachers and support them in a program to propagate their best practices with their peers.
To learn more about these extraordinary teachers, please visit: https://recognition.paemst.org

From the Executive Director

It's Time to Get Noticed!

VAST would like to recognize you!
If you are like most teachers you won't want the recognition but you need to get it....so tell us about yourself and something you have accomplished like a grant or an award and let us congratulate you!

If you know of someone that should be recognized then submit their information.

All we need is a picture, a title, name, award and a description.
Feel free to give it to us as a hard copy.
Leave it at the VAST PDI Booth and you will be entered to win something special.

How exciting!!!

Susan Booth, EdS

Executive Director

Teacher at Sea program

Teacher Resource

We are pleased to announce **NOAA's Teacher at Sea Program** will accept applications for 2017 starting in November. Applications and references are accepted only through our online application system from November 1 - 30, 2016. The application closes at 5:00 pm ET on November 30.

Until then, interested applicants should:
1. Visit the Teachers At Sea website
2. Visit our Frequently Asked Questions page to learn more about program eligibility and expectations.
3. Check out the resources available for teachers and students,
   Resources: http://www.noaa.gov/education
   Resources: http://oceanservice.noaa.gov/education/welcome.html

About NOAA's Teacher at Sea Program
The mission of the National Oceanic and Atmospheric Administration's (NOAA) Teacher at Sea Program is to provide teachers pre-kindergarten through college-level teachers a hands-on, real-world research experience working at sea with world-renowned NOAA scientists, thereby giving teachers unique insight into oceanic and atmospheric research crucial to the nation.

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Contents:

President's Corner

Fall - The Passage from Summer to Winter!

VAST President
Kathy Frame

Fall is here and your 2016 Virginia Association of Science Teachers (VAST) Professional Development Institute (PDI) will be here before you know it! Let this be your experience to grow, network and revitalize your teaching and yourself! As I write this, the leaves have not quite started to turn as in the picture at the left from Kinzua Dam in Mt. Jewett, PA, located in an area designated as God's country. Falls are incredibly beautiful there, as they are in our beautiful state of Virginia, especially in the Shenandoah Valley.

Mark your calendars with an arrow across the dates of November 17 to 19 to attend the best PDI ever—the 2016 VAST PDI. The theme is ***The Faces of Science in Virginia.*** You can start your experience with the **Preconference** on Thursday by engaging in an amazing set of new teaching tools at the elementary or the secondary level with session leaders: Christine Royce (elementary) and Stephanie Blackburn (secondary).

There are top-notch **Speakers!** Thursday (*The Faces of Science: Research and Industry*): Ellen Stofan, NASA Chief Scientist, "Looking Outward, Inward and Forward"; Friday (*The Faces of Science: Community and Environment*): Tamra Willis, Environment-Based Learning expert, "Get 'Em Outside Learning: It's the Natural Way to Teach", Carolyn Hayes, Past President NSTA, "The Vision of Science Education," and (*The Faces of Science: Community*): Aiden Coleman, 11-year-old Virginia science activist. Saturday: Trevor Frost (*The Faces of Science: Environment*), National Geographic Explorer, "Education through Exploration," and Dianna Cowern —*Physics Girl*—dubbed the next *Bill Nye the science guy*, "Fun Science Beyond the Formulas".

Exhibits: Open Thursday evening and until noon on Saturday. Collect your VAST bucks from the exhibitors to use at the Friday night auction. Check out the special Exhibit Hall Raffle on Friday afternoon sponsored by the exhibitors.

Regional Directors Reception: Thursday evening. Meet your Regional Director.

VAST Art Poster Contest Display: See the original works by Virginia artists K-12 winners showcasing the PDI theme ***The Faces of Science in Virginia***.

Awards Ceremony: Congratulate the 2016 Virginia and National Winners who represent the best in 2016 for Virginia on Friday night. This when you can hear 11-year-old Aiden Coleman who took on the state of Virginia for science!

Raffles: Friday First Timers, Regional Directors, just released *DNA Ahead Board Game*, PDI Registration, Saturday Closing Hotel Stay for two at the Williamsburg Hilton.

Bookstore: Books, giveaways…

Workshop Sessions: Check the list of sessions in this issue and make a list of those that best suit your needs and pique your interest.
Networking: The most valuable takeaway from your PDI!

Thinking of the students, families, and all residents of Florida…

Fall also can bring hurricanes. As I write this, Hurricane Matthew is bearing down on Florida's Space Coast. Schools have been closed and a forced evacuation has been issued for the barrier islands. Unlike our school closures in the North where we snuggle inside and keep warm while the snow falls outside, school closures in Florida at this time of the year mean students and their families physically leave their homes and drive, hopefully, to a safer spot inland to wait out the storm. Our family was in one such forced evacuation from the barrier islands of the Space Coast during Hurricane David. Our children were in elementary school with no concept of why we were packing our station wagon so quickly to go to Orlando. As we drove across the Eau Gallie Causeway to reach the mainland, water was leaping from the Indian River, covering the causeway, and licking the sides of our vehicle. The impending danger became all too real. When we returned five days later, we had our home, but on the street next to us, many homes had been leveled by the tornadoes spawned by the hurricane. It would be weeks before my students and my children would all return to school. My thoughts are with those students, their families, and all the people in Florida now. When you read this, hopefully Matthew will have run out of strength as it reaches Florida.

See you in November!

Kathy

PDI PreCon Sessions and Short Courses

PreCon Events:

Donna R. Sterling Institute
Science & Literature:
A Creative Interface for All Students
Thursday, November 17, 2016
VAST PDI • Williamsburg

Check the web for news, conference updates, registration, and forms. See page 8 for registration details. The PreCon sessions require special registration, but are well worth your time. Short Courses are designed just for your level.

VAST continues to honor science education pioneer Dr. Donna R. Sterling's legacy of "challenging the status quo" with a day focused on teaching practices to develop the generation of future scientifically literate citizens and scientists!

Plan to attend, preferably with your team of three teachers and an administrator. Registration for the preconference may be added to your PDI registration and special charges are available for just the preconference or for your team of three teachers and an administrator.

The preconference registration includes **1 free book, lunch**, and **access to short courses** as well as the **speaker Thursday night Ellen Stofan, Chief NASA Scientist!**

PreCon Session 1: Two concurrent sessions - 8:30 a.m. - 3:00 p.m.

Session 1: 8:30 a.m. - 3:00 p.m.

Elementary

Engage Students, Create Opportunities, and Design Lessons with Children's Trade Books for Science Learning

Presenter: Christine Royce

Description:

Participants will engage in model lessons that utilize children's trade books - both fiction and nonfiction - to teach science and enhance reading, writing and speaking skills, including supporting research for integration; and participants will be actively engaged in lessons that cover the life, physical and earth/space sciences as well as hitting on crosscutting concepts and practices. A list of all suggested books, references and materials are included in the workshop.

Christine Anne Royce has investigated and used children's literature in the classroom for more than fifteen years and understands the importance of integrating subjects at the elementary level to maximize instruction, learning and time. Royce, the co-author of Teaching Science Through Trade Books as well as the co-author for the column Teaching Through Trade Books which appears in NSTA's elementary journal Science and Children will select some of her favorite and some of the more popular topics that have been included in each.

Session 1: 8:30 a.m. - 3:00 p.m.

Secondary

Engaging Your Student Experts: Practical Strategies to Support Reading, Writing and Vocabulary Learning in the Secondary Science Classroom

Presenter: Stephanie Blackburn

Description:

In this highly interactive session, you will learn 12-15 learning strategies that engage and support reading, writing, and vocabulary development across the science curriculum, and can be implemented immediately with your students!

Stephanie Blackburn has over 20 years experience as a literacy specialist. She has served as a middle-school and secondary classroom teacher, instructional coach, Title I literacy specialist, Title I lead teacher, and district level consultant. Currently, Stephanie is a Literacy Specialist in Chesterfield County Public Schools. In addition to her position serving children during the day, she is adjunct faculty for both William & Mary and VCU teaching literacy learning courses for PreK-12 preservice and in-service teachers, ELL teachers, and Literacy Specialists.

Session 2 next page.

PreCon Session 2: 3:15 p.m. - 5:15 p.m. • Three Concurrent Short Courses

Short Course 1: Stop teaching to the Test and Start Teaching Students!

There has been quite a bit of attention given to inquiry learning in science classes, but in practice, it often is only found in advanced or honors level classes. The reasons for this include concerns about classroom management, student motivation, and the pressures of state testing. In reality, it is the struggling students, and those with learning disabilities, those who have not traditionally been successful or motivated in science classes, who most need a non-traditional approach to learning science. At risk students can thrive and learn with access to a student centered, intellectually challenging, and interactive learning environment. The same concerns that may lead some teachers to avoid these methods are often solved when students are excited and engaged. **Suitable for K-12 teachers.**

Dr. Ellen Stofan, NASA Chief Scientist

Come for the PreCon, Thursday, and be there for General Session I.

Short Course 2: Let's Talk Science

Are you using discourse/talk strategies effectively? Explore, share, and communicate science thinking using practiced steps. This interactive session will model a discourse/talk session using non-fiction literature. **Suitable for K-5 teachers.**

Short Course 3: Faces of Environmental EDUCATION from the Past to the Present

The classroom and local community are ideal places for helping students understand their connection to the environment. Participants will gain an understanding of environmental education from the past and how it relates to environmental literacy in 2016. Current environmental challenges and opportunities for teachers and schools in VA will be discussed and resources provided to help teachers develop environmentally literate students ready to face the challenges of the 21st century. **Suitable for 6-12 teachers.**

Session 3: Keynote Session and Opening of the 2016 VAST Professional Development Institute

5:30 p.m. - 6:45 p.m. Speaker: Dr. Ellen Stofan, NASA Chief Scientist

Schedule-at-a-Glance

Wednesday, November 16, 2016

5:30 p.m.-8:30 p.m. **VAST Board Meeting & Dinner**

Thursday, November 17, 2016, PreCon

8:00 a.m.-8:30 a.m. **Registration Desk for Pre-Conference/Short Courses Open**
(Lunch included in Preconference Registration Fee)

8:30 a.m.-5:15 p.m. **Donna R. Sterling Institute**
Science & Literature: A Creative Interface for All Students — ***Amphitheatre***

8:30 a.m.-3:00 p.m. **Session 1: Elementary:** *Engage Students, Create Opportunities, and Design Lessons with Children's Trade Books for Science Learning*

8:30 a.m.-3:00 p.m. **Session 1: Secondary:** *Engaging Your Student Experts: Practical Strategies to Support Reading, Writing and Vocabulary Learning in the Secondary Science Classroom* — ***Central Lounge***

3:00 p.m.-7:30 p.m. **Registration Desk Open for Short Courses/Conference Registration**

3:15 p.m.-5:15 p.m. **Session 2: Short Courses 1, 2, 3** ****Pre-Registration and tickets required.*

5:30 p.m.-6:45 p.m. **VAST Professional Development Institute Opening**
General Session I, Keynote Speaker: Ellen Stofan, Chief Scientist NASA — ***Auditorium***

6:45 p.m.-8:30 p.m. **Night with the Exhibitors** *(Cash Bar)* — *Collect VAST BUCKS in the Exhibit Hall!*

Meet Your Regional Director *(Complimentary Cider, drawing and Snacks)*

Friday, November 18, 2016

7:00 a.m. **Continental Breakfast**

7:30 a.m.-6:00 p.m. **Registration Desk Open**

8:00 a.m.-9:00 a.m. **Concurrent Session 1** — *Gen. Ses. II Drawing: PDI Registration in Roanoke.*

9:00 a.m.-6:00 p.m. **Exhibit Hall Open** *Raffle tickets available until 2:30; Exhibitor Raffle held at 2:45 p.m.*

9:15 a.m.-10:15 a.m. **Concurrent Session 2**

10:30 a.m.-12:15 p.m. **General Session II- Business Meeting: Presentation of the 2017 VAST** *Candidates for Office and members Vote by Ballot* — ***Auditorium***
General Session II- Speaker: Tamra Willis, Environmental Based Learning, Mary Baldwin University

12:30 p.m.-2:00 p.m. **Ticketed Lunch**

1:45 p.m.-2:45 p.m. **Concurrent Session 3**

2:45 p.m.-3:15 p.m. **Exhibit Hall Raffle**

3:15 p.m.-4:15 p.m. **Concurrent Session 4**

4:30 p.m.-5:30 p.m. **Concurrent Session 5**

6:15 p.m.-7:15 p.m. **Ticketed Dinner**

7:30 p.m.-8:30 p.m. **Awards Ceremony. Guest Speaker: Carolyn Hayes, NSTA President**

8:45 p.m.-10:30 p.m. **Auction and DJ** *(Cash Bar)*

Saturday, November 19, 2016

7:00 a.m. **Continental Breakfast** — *Gen. Ses. III First Timer Award!*

7:30 a.m.-10:00 a.m. **Registration Desk Open**

8:00 a.m.-9:50 a.m. **General Session III - VAST Membership Meeting: Meet Your New Officers**
General Session III - Speaker: Trevor Frost, National Geographic Explorer — ***Auditorium***

8:30 a.m.-1:00 p.m. **Exhibits**

10:05 a.m.-11:05 a.m. **Concurrent Session 6** — *Gen. Ses. IV Attendees eligible for Drawing!*

11:20 a.m.-12:20 p.m. **Concurrent Session 7**

12:20 p.m.-1:00 p.m. **Ticketed Lunch**

1:00 p.m.-2:00 p.m. **Concurrent Session 8**

2:15 p.m.-3:30 p.m. **General Session IV - Speaker: *Physics Girl*: Dianna Cowern -** Auditorium — ***Auditorium***

2016 Virginia Association of Science Teachers Professional Development Institute

General Session Speakers

November 17, 2016,Thursday, 5:30 to 6:45 PM General Session I Keynote

Ellen Stofan, NASA Chief Scientist

Dr. Ellen Stofan, NASA Chief Scientist who resides in Richmond, VA.
She served as the principal advisor to NASA Administrator Charles Bolden on the agency's science programs and science related strategic planning and investments. Her research has focused on the geology of Venus, Mars, Saturn's moon Titan, and Earth.
Sponsored by the Virginia Space Grant Consortium

November 18, 2016, Friday, 10:30 AM to 12:15 PM General Session II

Tamra L.Willis, Ph.D., Associate Professor, College of Education, Mary Baldwin College

Tamra Willis, Environmental Based Learning, , at Mary Baldwin University.
Dr. Willis teaches a variety of courses for both pre-service and in-service teachers. In addition, she directs the Master of Education in Environment-Based Learning (EBL), a program designed for K-12 teachers and outdoor educators who use the natural environment to teach all subjects.

November 18, 2016, Friday, 7:30 to 8:30 AM Awards

Ceremony Carolyn Hayes, Ed.D., Past President NSTA

Dr. Carolyn Hayes is the Retiring President of the National Science Teachers Association (NSTA). She began serving her one-year term on June 1, 2016. Dr. Hayes is a retired high school biology teacher from Greenwood, Indiana. She brings years of leadership and teaching experience to NSTA through her work as a classroom teacher, college professor, science coordinator, author, and science consultant.

November 19, 2016, Saturday, 8:00 to 9:50 AM General Session III

Trevor Frost, National Geographic Explorer

Trevor Frost is a National Geographic Explorer who resides in Richmond, Virginia and has always been drawn to rivers. In his free time, you can find him kayaking the rapids of the James River. He suggests that you could help save rivers by spending as much time as you can on a river that is part of your life. For every second you spend on that river you will fall more in love, and your desire to protect it will grow.
Sponsored by Cengage Learning / National Geographic Learning

November 19, 2016, Saturday, 2:15 to 3:30 PM General Session IV

Dianna Cowern, *Physics Girl*

Dianna Cowern, is an internationally recognized science communicator, physics enthusiast and brainstorming wizard who is the primary creator of ***Physics Girl,*** a YouTube channel that partnered with PBS Digital Studios in 2015. Dianna calls San Diego, California her home.
Sponsored by the Virginia Space Grant Consortium

2016 VAST PDI REGISTRATION

Registration Online at www.vast.org

Payment Methods
Secure credit card, check payable to VAST, or purchase order.

Important dates:

Until October 18, 2016. **Early Bird Registration**.

October 19 to October 28, 2016. **Standard Registration.**

Fee Structure
VAST Membership $25

Thursday Preconference Registration Fees
(Includes Two Afternoon Short Courses and Choice of Either Elementary or Secondary Morning Session, Book, and Lunch) or Secondary)

$100 With paid registration to the VAST PDI

Professional Development Institute
Optional Thursday Short Courses $5/Course with Paid Registration:
Presenter (Member, Nonmember, Commercial) Registration. Deadline: September 5, 2016
Member Presenter Registration: $155
Nonmember Presenter Registration: $200
Commercial Presenter Registration: $150/hour

Early-bird Registration—Deadline: October 18, 2016
Member Registration (this includes Life Members and Retired Members): $170
Nonmember Registration $220
Student Registration: $99
Spouse/Guest Registration: $98

Standard-Registration—Deadline: October 28, 2016
Member Registration: $205
Nonmember Registration: $250
Student Registration: $130
Spouse/Guest: $98
Saturday Only: $100

Register for VAST PDI

2016 VAST PDI Hotel
DoubleTree by Hilton: Westfield Marriott
50 Kings Mill Road, Williamsburg, VA 23185

Sorry, The DoubleTree by Hilton Williamsburg no longer has rooms available for the 18th of November at the group rate. There may be a few still available if you call, however, the rate would be $159 plus taxes for the 18th only.

The group rate of $91 plus tax will still be honored for other nights of the conference.

DoubleTree: Register

The Courtyard Williamsburg Busch Gardens Area is offering rooms for $91.00 USD per night

Virginia Association of Science Teachers Room Block

Start date: 11/16/16 **End date: 11/20/16**
Last day to book: 10/17/16

Marriott Hotel(s) is(are) offering your special group rate ($91.00 per night) Click the following link:

Book your group rate for Virginia Association of Science Teachers Room Block.

Courtyard Williamsburg: Register

Note:
If you have a room at the **Double Tree Williamsburg** and plan to release it then please contact Susan Booth (mailto:executive.director@vast.org) before doing so.

If you need a room for the 18th then please let Susan Booth (mailto:executive.director@vast.org) know to be put on a wait list. Please make sure you do make room reservations as a back-up.

VAST Election

The Nominating Committee, Chair Jenny Sue Flannagan, presents the following slate of officers for election at the VAST Annual Meeting on Friday, November 18, 2016 in Williamsburg. Elected officers will begin their terms January 1, 2017.

Candidates for President Elect:

Jacqueline (Jackie) McDonnough, Ph.D. is a lifetime member of VAST and serves as Associate Professor, teaching masters and doctoral-level courses for the School of Education (SOE) at Virginia Commonwealth University (VCU) in Richmond, Virginia. VCU is a public research university with a mission to advance knowledge and student success by supporting innovation, diversity, sustainability, and collaboration. Dr. McDonnough embodies VCU's mission and the SOE's goal of preparing graduates to be science teacher leaders, ready to make a difference in students' lives.

At the state-level, Jackie has served the Virginia Association of Science Teachers (VAST) on the Board of Directors as Region I Director from 2004 to 2011. During that time she has made numerous presentations at VAST and instituted participation of Virginia Commonwealth University pre-service teachers' participation in the annual PDI. Currently she is serving as the Teacher Resources Co-chair on the VAST Board. She has also served on the National Association of Science Teachers Research in Science Teaching Committee.

Jackie has shown a career-long commitment to student learning and science teaching in Virginia. She served as co-principal investigator of the U.S. Department of Education Virginia Initiative for Science Teaching and Achievement (VISTA) Grant from 2011-2015. The program provided research-based reform of K-12 science instruction to teachers, science supervisors and university-level science educators so they could help all students, including students with disabilities and English learners, thereby maximizing their science understanding and practice.

Throughout her career, Jackie's achievements have resulted in numerous publications, grants, and community recognition awards, including: VCU SOE Internal Research Grant in 2007, VCU Community Engagement Grant from 2006-2007, REB Excellence in Teaching Award in 1995, WPIX TV Golden Apple Award in 1995, and a City of Richmond School Board Certificate of Appreciation for contributions to Richmond Public Schools in 1995. Her publications include articles in the *Journal of Science and Mathematics, Science Education, The Science Teacher,* and *Science Scope*.

Prior to joining the VCU School of Education, Jackie taught science in secondary schools around the Richmond area. As a longtime citizen of Richmond, she received her Bachelors of Science in 1989 and Masters of Education in 1999 from VCU. In 2002, she completed her Ph.D. in Science in Education at the University of Virginia.

Jackie hopes to use her vast experiences and connections across the commonwealth to serve as the next VAST president elect. The VAST has been critically important to teachers of science over the years due to excellent leadership. Jackie McDonnough will continue on that path and bring VAST to a new generation of teachers of science in the Commonwealth.

Anne Moore, M.S.Ed. has been a member of VAST for three years, is currently serving as the VAST PAEMST board representative, and has presented at several VAST PDI's. Currently teaching STEM and Technology at Goochland Middle School, Anne previously taught Science in Chesterfield County in both the regular classroom and a gifted center.

Having served in many school and county leadership positions, Anne has extensive experience in working with diverse groups to establish effective programs and plan conferences. Working as a member of the Goochland County STEM Advisory Board, Anne has assisted in establishing a successful summer STEM camp and in-school programs, as well as presenting at STEM and Science related conferences at the local, regional, state, and international levels. Her expertise in the STEM arena addresses the necessity for collaboration among different Science disciplines.

If elected to the position of President-Elect, Anne would like to focus on VAST membership and how to effectively collaborate with other related organizations to combine resources and explore the feasibility of a joint convention. Teachers would be able to attend PDI's that support not only their focused science curriculum, but also be a part of the larger VAST community. She would also like to explore the possibility of an umbrella membership that combines VAST with other science related professional organizations so that teachers reap the benefits of focused groups, increases VAST membership, while providing a broader spectrum of resources. Moving into the position of President, Anne would work diligently to represent VAST at the state level on policy and addressing current and applicable Science Standards.

Anne is the recipient of several awards including the Presidential Award for Excellence in Mathematics and Science Teaching, 2013; Presidential Innovation Award for Environmental Educators, 2012; Thomas Jefferson Award for Outstanding Contributions to Natural Science Education, 2012; Air Force STEM Teacher of the Year, 2013; and the Outstanding Gifted Teacher of the Year, Virginia, 2012. She is also a Teacher Advisor for 100kin10, a national STEM coalition supported by the White House Office of Science and Technology. Other professional association memberships include NSTA, ITEEA and VTEEA.

Anne has her Bachelor of Arts degree in Education, University of Richmond and her Master's of Science in Education, Special Education- Gifted, Talented, and Creative, Arkansas State University.

Voting for officers will take place during General Session II and the VAST Business Meeting, Friday 10:30 a.m.

Uncontested Candidates:

For Treasurer (2017 -2020) Matt Scott
Matt Scott is a secondary Science Teacher in Henrico County Public Schools at Douglas S. Freeman High School. He currently teaches Earth Science. His previous work was at the Virginia Space Grant Consortium as a master teacher; he has worked with NASA and served as a field geologist at William and Mary.

For Director, Region 2 (2017-2019) Dr. Anne Mannarino
Dr. Anne Mannarino, is a Project Director at the Martinson Center for Science & Mathematics of Regent University. She has been VAST's Journal Managing Editor since 2011. Anne also was a VISTA Science Curriculum Specialist for the College of William & Mary. Prior to her work with VISTA, Dr. Mannarino served as the Secondary Science Coordinator at Virginia Beach City Public Schools

For Director, Region 4 (2017-2019) Susan Bardenhagen
Susan Bardenhagen has taught grades 2-5 and Math and Science in grades 6-8. She has been the Region IV Director since 2011 and is also the Regional Director Coordinator since 2014. Susan is a founding member of BNVCTM, a regional Math council affiliate of NCTM.

For Director, Region 6 (2017-2019) Tom Fitzpatrick
Tom Fitzpatrick, the K-12 Science Supervisor of Roanoke City Schools, has been the Region VI Director since 2015. He is a trainer for Project Learning Tree and Project WILD. Tom is veteran of 29 years of science education and taught middle school science for 21 years.

For Director, Region 8 (2017-2019) Dr. Patricia Hastings
Dr. Patricia Horne Hastings is an Assistant Professor of Elementary Education at Longwood University. She was a 2015 PDI presenter and also a speaker at Longwood's Spring 2016 Blackwell Talk Series, "Modeling Effective K-12 Classroom Education."

VAST Mail-In Ballot
2017 VAST Candidates for Office

Your Membership ID#_____ (Your number is on the email for this newsletter)

Check the candidate of your choice for each office below:

President-Elect (Select One)	☐	**Jackie McDonnough**	☐ **Anne Moore**
Director, Region 2 (2017-2019)	☐	**Dr. Anne Mannarino**	
Director, Region 4 (2017-2019)	☐	**Susan Bardenhagen**	
Director, Region 6 (2017-2019)	☐	**Tom Fitzpatrick**	
Director, Region 8 (2017-2019)	☐	**Dr. Patricia Hastings**	

Mail in ballots must be mailed and postmarked by November 1, 2017 to:

Dr. Jenny Sue Flannigan
Associate Professor
Director, Martinson Center for Mathematics and Science
Regent University School of Education
1000 Regent University Drive, ADM 243
Virginia Beach, VA 23464

Meet Your Regional Director

Region I: **Laura Casdorph & Carolyn Elliott**

Region II: **Adrienne Sawyer;**
Nominee: **Anne Mannarino**

Region III: **Mike Pratte & Craig Vann**

Region IV: ***Current/Nominee***
Susan Bardenhagen

Region V: **John Almarode & Tammy Stone**

Region VI: ***Current/Nominee***
Tom Fitzpatrick

RegionVII: **Diane Tomlinson**

Region VIII: **Pam Aerni**
Nominee: **Patti Horne**

Regional Events Timeline

…thru November 17: Find an item unique to your region to add to the regional baskets that will be auctioned at the VAST Bucks Auction/ DJ/Dance night. Collect biographical, historical, and geographical information about YOUR region to help answer a ten question entry for a two-volume book that will be given out on Friday. Only Thursday evening attendees who have submitted an entry form will be eligible for the Friday morning drawing.

November 17: 6:45-8:30 ***"Night with the Exhibitors and Meet Your Regional Director Event".*** Collect VAST bucks from the exhibitors. Find your region's table and meet your regional director. Drop off items for your region's basket. Complete your entry for the two-volume book and submit it to your regional director/designee by 8:30 p.m. Add your map pin to VAST's giant regional map to indicate where you travelled from to attend the PDI.

November 18: 10:30-12:15 ***"General Session II"***: Elections; Business Meeting; and Speaker. From the entries at the Thursday evening Regional Meeting, there will be a drawing for a 2-book set of Kendall Hunt Science books for each region's qualifying entries. A grand prize for a 2017 VAST Registration will be held for all in attendance. You must be present to win! Enjoy the PDI sessions and collect VAST bucks. **"Auction and DJ": 8:45-10:30 Bid on items including the regional baskets.**

November 19, 2016: 2:15-3:30 Plan to stay to the end of the "***General Session IV"*** for a chance to win the PDI Grand Prize. If you are present, you may win a two night, hotel stay for two, including breakfast, at the Williamsburg, Double Tree by Hilton, valid for one year.

After the PDI ! Return to your region and encourage colleagues to become members. Consider presenting to represent your region and share your talents with science educators throughout the Commonwealth.

2016 VAST Art Poster Contest

With the PDI title of ***"Faces of Science in Virginia"*** for their theme, nearly 80 students across the commonwealth created artwork for our second annual Student Art Poster Contest. This year's four categories were Kindergarten through 2nd Grade, 3rd through 5th Grades, 6th through 8th Grades, and 9th through 12th Grades. After preliminary judging, thirty-one entries were selected as semi-finalists with the following sixteen awarded as finalists. Their artwork will be displayed at the PDI in November.

The Finalists for High School are:

First Place: Brooklyn Paige Starkey, grade 10 from Marion HS, Mrs. Page- Science teacher; **Second Place Tie: Patty Mathis**, grade 10 from Gate City HS, Mrs. Rowlett and **Erin Elizabeth Taylor,** grade 11 from Honaker High School, Amy Compton; **Third Place: Erin Day Johnson**, grade 12 from Western Branch High School, Mrs. Alexander; and **Honorable Mention: Allyson Sonja Linton**, grade 11 from Maggie Walker Governor's School, Harold Houghton.

The Finalists for Middle School are:

First Place: Sarah Hollins Baldwin Pierpoint, grade 7 from Linkhorne MS, Mrs. Sweeney; **Second Place: Lena Jovancevic**, grade 6 from Willow Springs ES, Mrs. Panczyszyn; **Third Place Tie: Dylan Eliza Young,** grade 7 from Linkhorne MS, Mrs. Sweeney and **India Day Johnson**, grade 8 from Ruffner Academy MS, Mrs. Ashley Nelson-Combs; and **Honorable Mention: Victoria Mutembezi,** grade 7 from Linkhorne MS, Mrs. Sweeney.

The Finalists for the Intermediate Level are:

First Place: Kaydan Shomaker, grade 4 from Middletown ES, Ms. Deck; **Second Place: Corrin Ashley Germeyer**, grade 5 from Gainesboro Elementary School, Jennifer Wilhelm; **Third Place: Rainah Amirah Iyesha Abdulbaaqee,** grade 5 from Booker T. Washington Elementary School, Ms. Stansick.

The Finalists for the Primary Level are:

First Place: Blake Waldron, grade 2 from Berkeley Glenn Elementary School, Mrs. Frank; **Second Place: Aniyah Abdulbaaqee,** kindergarten from Booker T. Washington Elementary School, Mrs. Perry; **Third Place: Samuel Nicholas Rodriguez**, kindergarten from Weems Elementary School, Erlinda Cruz.

This year's fourteen judges have a diverse set of STEAM backgrounds and hail from many locations across the United States.

Laura Angle is the CEO of Students4STEM, which she founded to share and support student led STEM innovation Club programs. She is the former director of STEM Education at the USA Science & Engineering Festival. Laura presented workshops on "Coding" to nearly 400 educators in Fairfax County and is helping the Department of Energy improve their promotion of Energy Literacy material and support of educators. **Dr. J. P. Behrens** has worked tirelessly in both the fields of science and of art. As a Cognitive Archaeological Art Historian, Gallery Artist, and Science Fiction Writer, Dr. Behrens' most recent achievement was the 2016 James E. Haywood Award from the Federation of Galaxy Explorers for work fascinating children about science as the author of nine science fiction books.

Briton Camphouse is the coordinator for the Buchanan Partner's Gallery, at the Hylton Performing Arts Center, on George Mason University's Science & Technology campus since its opening six years ago and has curated over 40 exhibitions. She is currently a development officer at The Nature Conservancy for the Virginia chapter. Briton earned her BA in art and art history from JMU and her MA in Arts Management from George Mason.

Dr. Erin C. Devine is Associate Professor of Art History with Northern Virginia Community College's Woodbridge Campus where she is the Gallery Director for Contemporary Art. She is a graduate of Indiana University, with a Ph.D. in Contemporary Art. Erin is an active artist in the northern Virginia region and also writes art criticism for Washington City Paper, Art Papers, and Woman's Art Journal.

Lisbeth Firmin is an award-winning contemporary American realist and painter/printmaker, known for her urban landscapes. For over four decades her work has been in solo and group shows across the country and internationally, and in public collections including in New York, Massachusetts, Rhode Island, and Texas. She moved from NY City in 2000 to a small village in upstate NY, where she paints every day.

Tom Fitzpatrick, Region VI Director for VAST, is the K-12 Science Supervisor of Roanoke City Public Schools. He is a veteran of 29 years of science education, and taught middle school science for 21 years. As a trainer for both Project Learning Tree and Project WILD, Tom conducts environmental workshops throughout Virginia.

Jim Gallagher retired from the World Bank. He is the president of the Prince William Art Society, an organization of local artists founded over twenty years ago; a board member of the Prince William Arts Council; and paints in acrylic and oil since he retired. Jim has painted the annual rain barrel that is raffled each year by the Prince William Conservation Alliance held at the Merrimac Farm.

Karen Graves is a studio artist who grew up in the Catskill Mountains of New York and continues to call the region her home. She earned a BA in Art Education from Buffalo State, has been painting watercolors for the last 25 years, and has taught adult art classes in Delhi, NY. Karen continues to create in both watercolor and pen and ink and owns an art studio, Stonewall Watercolors.

Amelia May was raised by art professors who taught at a study abroad program in southern France; she studied visual and art history throughout her youth. Amelia went on to double-major in French and History, received her MA in French Civilization, worked briefly in Paris, and then pursued her law degree at George Mason while working for an international non-profit organization. She is an attorney and a former public school teacher.

Belinda Miller is the published author of "The Phillip's Quest Series' and the award-winning "Ragwort Chronicles" children's book series. She is the co-founder of Prince William County Writers and the Washington, DC Branch of American Pen Women. She is also a jewelry designer of Bella l'Ora Jewelry & Design. Belinda has a Master's degree in Education and is a former Reading Specialist.

Anna Mish is Gallery Director at the Caton Merchant Family Gallery in the Center for the Arts of Greater Manassas/Prince William County. She has curated over 100 visual art exhibits since the inception of the gallery in 2002 when the Center made its home in the Historic Candy Factory. Anna serves as a board member on the Prince William County Arts Council.

Pat Rawlings is a space and science artist. He has produced scientifically accurate space art for NASA, magazines, books, film, and television for over 35 years. His artwork for all of the NASA Centers reflects more than a quarter century of space exploration plans, ranging from robotic planetary missions to the human exploration of Mars and beyond. To ensure scientific and technical accuracy of his compositions, Pat consults with astronauts and experts.

Piper Sigrest is studying aerospace engineering at MIT and has interned at NASA, Aurora Flight Sciences, and SpaceX. Piper loves building rockets with the MIT Rocket Team, flying airplanes, and crocheting. She graduated as valedictorian from The Governor's School in Prince William County. Piper is an artist and a private pilot.

Mary Van Dyke is a designer by nature and nurture. As a member of VAST, Mary enjoys appreciating diversity and cultivating stewardship. She is trained as an architect and serves on the VA Cooperative Extension Leadership Council, NOVA Outside, and the APS Advisory Committee on Sustainability. She brings an appreciation of contextual design to facilitate interdisciplinary outdoor learning programs and blogs at Green STEM Learning.

An Elementary Teacher's VAST PDI "Play List"

Shirley Sypolt, VAST President-Elect

As school is settling in and autumn/fall has arrived please consider joining me at the VAST PDI this November to celebrate "***The Faces of Science in Virginia***". I have enjoyed serving as your VAST President-Elect this past year and look forward to being your next VAST President, in 2017.

I'm so excited about the upcoming VAST Professional Development Institute that will be held at the DoubleTree by Hilton Hotel in Williamsburg, Virginia (November 17-19). Just like Christmas, I've already checked my list once, and checked it twice, and I encourage all elementary teachers (this is my 25th year as an elementary teacher in Virginia) to come to the PDI and have a great time interacting with other awesome science educators. Plan to join us on Thursday for the Donna Sterling Elementary, Pre-Conference session: ***Engage Students, Create Opportunities, and Design Lessons with Children's Trade Books for Science Learning***. Don't forget to attend our very first ***Elementary Extravaganza*** event on Saturday morning, with lots of hands-on activities and great, fun ideas for our elementary teachers. Come and enjoy listening to our **General Session speakers** throughout the PDI, and spend your time traveling from one concurrent session to another.

My "playlist" of concurrent sessions at the PDI currently includes: *Meet the SOLs in Your Schoolyard, Coming to an Ocean or River Near You, Sprouting Success with Agriculture in the Classroom, Butterfly Gardening to Raise Caterpillars in the Classroom, The Environmental Literacy Model (ELM), "What Is Happening to Our Climate?" Elementary GLOBE, Skeletons in Our Closet: Fossils Tell of Virginia's Past, Oh Honey! The Plight of the Honey Bee, Even Animals Live Downstream!, Hands-on Life Cycle Project with Silkworms, Needle in the Haystack: Picking High-Quality STEM Curriculum, Become GLOBE Certified Online - Become Citizen Scientists, QR Coding, REM (Repopulating Eastern Migratory Species)*. You will especially enjoy this last concurrent session as I will be co-presenting with an awesome high school senior, Kaleela Thompson, as she talks about all the "real-world" truly awesome science things that she's been doing since she was a General Session co-speaker at our Norfolk VAST PDI when she was only 14 years old.

Come to the 2016 PDI to "meet & greet," enjoy some time to "talk to" and "hang out" with long time friends and come with the expectations of having a great time celebrating science, making new "science" friends and walking away with great ideas to take back to your own classroom. Also, don't forget to visit with our vendors and have a great time attending the silent auction and other special events.

I look forward to seeing you at the 2016 PDI (Professional Development Institute).

Shirley Sypolt

Elementary Extravaganza!

Session 6, 10:05 a.m. - 12:20 p.m. (2 hour session), Room 18

Barbara Young,
Virginia Department of Education, Retired

In this session there will be multiple hands-on lessons offered by several educators for teachers in grades kindergarten through fifth grade. Each session participant will be able to select four of the lesson presentations to gather great ideas and lessons to take back to their classroom. There will also be door prizes given out to lucky participants!

Get Ready for the Friday Night Event @ VAST PDI!

2016 PDI
November 18, 2016
8:45 pm - 10:30 pm

DJ Music
AUCTION FUN
SCIENCE AUCTION

HOW ABOUT AN AUCTION?

There is seldom a better floor show for a group of science teachers than to see them bidding against each other for that one thing they could really use. The best part is that to participate, it will **cost you exactly nothing**. That's right – **NOTHING!** Besides, real money isn't good at the auction!
Do you have a box of glassware sitting in the back of your stockroom that has only a future of collecting dust? Maybe you have an old telescope that you would love to use, if only you could find a replacement part? Wouldn't it be great to be able to trade these and other surplus bits with your fellow teachers of science, and have a good time doing it**?**

VAST BUCKS $$$$

Do you have VAST Bucks for the Auction?
Everybody can visit the exhibitors to receive VAST Bucks! Now mind you, it is not real money! They are VAST Bucks, good only at the auction to be held Friday night, November 18th. When else have you had the chance to burn through hundreds and thousands of other people's money?

HOW TO EARN MORE VAST BUCKS $$$$

All that you have to do to "earn" VAST Bucks is to:
Visit the exhibitors during the open hours of the Exhibit Hall up through *2:30 pm,* Friday.
You may need to remind Exhibitors to give you some VAST Bucks!!

A FEW RULES TO FOLLOW

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

Come to the PDI and Win a Prize!
Really You Could Win!

Do you know your superintendent's region? Plan to attend the **Thursday, November 17, 6:45-8:30 "Night with the Exhibitors"** where you collect VAST bucks from the exhibitors the use at the Friday night **Auction**. Also, some booths will have their own raffles and raffle tickets. Then go to the**"Meet Your Regional Director Event"** where you will meet your director and network with others from your region. See page 11 to learn more. Complete your raffle entry for the prizes to be won at **"*General Session II*".**

by Julia H. Cothron, Giese, Ronald N., Rezba Richard J, Paula Klonowski Leach, Lewis Virginia Vimpeny

Did you enter the Raffle? VAST invited you in an e-note to enter a drawing for a full registration to the VAST Professional Development Institute (PDI) this year, plus a one year VAST membership. You could win one of these two sponsorships being awarded by the Virginia Lottery which has contributed nearly $8 billion to Virginia's K-12 public schools since 1999.

we're game for education

Are you a First Timer? If this is your first VAST PDI, be sure to ask for the "First Timer Ribbon" at the Registration Table. Attend ***General Session III*** on **Saturday, November 19** at 8:00 am where **First Timers** will be recognized. The winner of the **Bill Stevens' First Timer Scholarship** will be announced. **ALL FIRST TIMERS** are eligible. The scholarship provides free registration for the **2017 VAST PDI in Roanoke, VA**.

Friday, November 18: 10:30-12:15 ***"General Session II"***: Elections; Business Meeting; and Speaker. From the Thursday evening Regional Meeting entries, there will be 8 drawings for 2-book sets of books, ***STEM Research for Students***, ***Volumes 1 and 2***. One set will be awarded to someone in each region.

Also at "*General Session II*" All in attendance have a chance to win a **Registration for the 2017 VAST PDI in Roanoke, VA**. You must be present to win!

Are you a student or a pre-service teacher? If you are, be sure to attend the Friday meeting just for you in Room 16, Session 3, (1:45 p.m.-2:45 p.m.). Not only will you have a program with information you can use about your profession, an opportunity to network with other students and resources to get you off to a great start, but there will be door prizes, a chance to win a $50 dollar PDI scholarship and other goodies.

Friday night don't miss the "Auction and DJ" at 8:45-10:30. Bid on items using your VAST Bucks and have fun.

Come to the *General Session III* on Saturday, November 19, 2016, 8:00 a.m.-9:50 a.m. and you may win the door prize. There will be a drawing for the newly released board game "DNA Ahead" developed by Dorothy Semenow. To learn more about the board game, visit http://www.dnaahead.com/.

Those who attend *General Session IV* on Saturday, November 19, 2016: 2:15-3:30pm will automatically have a chance to win the **PDI Grand Prize**. If you are present, you may **win a two-night stay for two, including breakfast, at the Williamsburg, DoubleTree by Hilton, valid for one year.**

The 2016 VAST Board Recognizes the Following Individuals and Organizations:

Anne Mannarino — 2016 Virginia Project Learning Tree Outstanding Educator and 2016 National Project Learning Tree Outstanding Educator

Lisa Deaton — upon her retirement for her service as Project Learning Tree State Coordinator

Carol Zokaites — upon her retirement for her service as Project Underground State Coordinator

Virginia Living Museum, Newport News — 50th Anniversary

National Wildlife Federation — 75th Anniversary

Virginia's State Parks Service — 75th Anniversary

National Parks Service — 100th Anniversary

Virginia Department of Game & Inland Fisheries — 100th Anniversary

US Fish & Wildlife Service's "Migratory Bird Treaty" — 100th Anniversary

Rediscovering Our Relationships

Photo courtesy of Alicia Pitarque"

There are two kinds of intelligence: one acquired,
as a child in school memorizes facts and concepts
from books and from what the teacher says,
collecting information from the traditional sciences
as well as from the new sciences.

With such intelligence you rise in the world.
You get ranked ahead or behind others
in regard to your competence in retaining
information. You stroll with this intelligence
in and out of fields of knowledge, getting always more marks on
your preserving tablets.

There is another kind of tablet, one
already completed and preserved inside you.
A spring overflowing its springbox. A freshness
in the center of the chest. This other intelligence
does not turn yellow or stagnate. It's fluid,
and it doesn't move from outside to inside
through conduits of plumbing-learning.

This second knowing is a fountainhead
from within you, moving out."

— Jalal ad-Din Rumi
Translated by Coleman Barks

But where can wisdom be found?
And where is the place of understanding?
Man does not know its value,
Nor is it found in the land of the living.
The deep says, 'It is not in me';
And the sea says, 'It is not with me.'
It cannot be purchased for gold,
Nor can silver be weighed for its price.

— Job 28:12-15

This has been a sobering summer, harsh and desiccating, overheated and punctuated by verbal and physical random acts of violence. Forty-nine lives were obliterated in Orlando, FL, shootings in Falcon Heights, MN and Baton Rouge, LA were met with retaliatory black and blue violence in Dallas, followed by further killing in Chicago and Mississippi, smoldering resentments stoked by the inflammatory rhetoric of a political campaign. Contributing to this atmosphere are the remarks and mocking tone of a national political figure who happens to live here in Virginia: "I think one of the great problems we have in [our party] is that we don't encourage you to be nasty. We encourage you to be neat, obedient, loyal and faithful and all those Boy Scout words, which would be great around a campfire but are lousy in politics." As similar events unfolded in Nice and Munich, the atmosphere of frustration, fear and hatred is not unique to America.

At a more personal level, I had learned about the mid-winter death of an elementary school classmate who had battled leukemia for six long years. Larry and I only saw each other once or twice each year in summers. Besides the loss of our visits and conversations, I mourn his absence from the earth as I honor his return to the earth. Larry was a husbandman in the deepest sense of the word. Like his father before him, he ran a family farm and spent most of every 15-hour day in the fields tending his own love for the earth, from seed to harvest. Though his son will continue the tradition in years ahead, it is his personal bond and dedication with the good earth which I miss most.

In Larry's case the poet's overflowing springbox metaphorically and literally watered the crops which he tended as his farm is still irrigated from a spring-fed pond. Do we not hope as well that within our own classrooms students will nourish one another? Despite long hot summers of self-centeredness or abuse our children manage to find some measure of accomplishment or peace. Recent statistics have revealed that 26% of U.S. children will have seen or experienced a traumatic event by their fourth birthday. Those who work with these children try to help them separate their sense of self-worth and self-knowledge from how they feel.

The adult world seems rife with environmental and personal devastation. Some call this the "real world" as though life in our schools were not real. We teach our children the values of selflessness and consideration, yet we have poisoned our oceans and filled them with plastic, including the sea water we have evolved to carry within our arteries and veins. We tend toward knowledge which is acquired, as Rumi puts it, and neglect the second intelligence which moves as a fountainhead from inside us to outside. As California grapples with the emergencies from dwindling water supplies and their effects on food production, it faces in microcosm what larger populations in the world have been facing.

And yet, the notion of grabbing all we can get before the other person is hardly a helpful survival technique in a world where the environment overpowers us and nuclear arms continue to be stockpiled. A wise investor once advised, "Temper your greed, and manage your fear." This could apply to many other situations including limits to natural resources and the drive to control others, including our students. As far back as 1873, Charles Reade wrote in *A Simpleton*, "Well, everyone for himself and Providence for us all – as the elephant said when he danced among the chickens." This is often used as an illustration of the distinction between descriptive and normative thinking: what is merely descriptive to the elephant (or perhaps prescriptive) is of much normative concern to the chickens. As one might realize, this could apply to income inequality, energy resources, food resources, or water supplies. In response to California's new 2015 regulations on water conservation, a wealthy homeowner complained to the *Washington Post*, "[We] should not be forced to live on property with brown lawns, golf on brown courses, or apologize for wanting our gardens to be beautiful…[W]e're not all equal when it comes to water."

Given these examples, is it not ironic the extent to which many of us seek to manage and regulate the growth of our children? Along a portion of the perimeter of my school, bordering an elementary school and a neighbor, there was a luxuriant grove of cedars and wild undergrowth. As I walked to the campus one morning I discovered a landscape crew from a company curiously named GreenTree completing, at the school's request, the total removal of the wild and untidy undergrowth including several trees as large as a foot in diameter. When children first draw their simplified versions of trees or people or houses, they use simple geometrical shapes. The photos at the top of this writing show the adult version of these lollipop trees, the antithesis of the story given years ago by a friend: Morgen told of a gardener's response to the query of an appreciative property owner, "How do you know what to cut and what to leave?" she asked. "Well, M'am," he replied, "First, you gotta study how they want to grow, then you cut off everything that gets in the way." Could not the same be said about the gardens of classrooms? Through well-intended but misguided trimming are we not in danger of producing lollipop kids whose intelligence arrives "through conduits of plumbing-learning" and is SOL-measured by "competence in retaining information?" Perhaps the most insidious aspect of this landscaping lesson is that it serves as a sort-of subliminal syllabus for elementary and high school students as to how trees "ought" to look.

Order is not a pressure
which is imposed on society
from without, but an equilibrium
which is set up from within.
—José Ortega y Gasset

Rumi's tablet "already completed and preserved inside you," that "fountainhead from within you," longing to move out is something each of us should be dedicated to releasing through work with our children, to help counter the xenophobic rhetoric being currently broadcast through fear and ignorance. Last spring an article in *Education Week* [23 March 2016], addressing the need to replace fear with curiosity in our children, leads off with an illuminating quote by Yoda, the *Star Wars* Jedi master, "Fear is the path to the dark side. Fear leads to anger. Anger leads to hate. Hate leads to suffering." The authors, Maya Soetoro-Ng and Alison Milofsky [note their names], point to a 2011 study which underscored earlier findings that "individuals who have low self-esteem are more likely to show bias toward people who are

different from them." Children have an innate curiosity about the world around them which, once their own needs and identities are understood along with those of others, can readily be utilized to erect bridges instead of barriers. As the authors point out, "Root causes on conflict can be moderated with discussion that engenders curiosity about other perspectives, builds empathy, and makes complexity a friend rather than a foe." Whether adults or children we almost always find that whenever our personal biases click in, they are eroded away once we enter into dialogue with what seems alien or strange, be it another person or a different culture. Dialogue is absolutely essential so that communication comes to replace the destructiveness of a win-or-lose culture. Dismantling arguments becomes less important than building other perspectives. The urgency for us as educators comes from the realization that more than half of our global population is under 30, and more than two-thirds of them live in Middle Eastern or African countries where violent conflict is epidemic.

Examples of the effectiveness of this approach to conflict management are numerous, even in such global hot-spots as Ireland and the Middle East. Afghan youth organized to encourage peaceful elections in 2014, Uganda has the Uganda Muslim Youth Development Forum to counter extremist and militant messages, in the U.S. there is an outstanding national program on Teaching Tolerance and a website called "I Am Your Protector" to give stories of people who defend each other from verbal or physical abuse. In a recent visit to Yalta a group of peace activists met with young adults there who were committed to their own efforts to mitigate rising tensions between Russia and the U.S. Julia, a university student and interpreter commented, "I always want to choose words instead of weapons." An engineering student, Anton, added, "The youth of different countries would like to bridge the gap and work out ways to unite people…all of us should soften the geopolitical relations between our countries and try to get together on the same level on the same ground…and enable us to solve ecological problems."

For us in the United States, part of our cultural heritage makes facing serious and seemingly intractable problems difficult. This is a holdover of the old phrase attributed to Daniel Boone, "When I can see the smoke from my neighbor's chimney, I know it's time to move on." When streams or lakes became less productive, timber ran out, or disputes between native peoples or one's fellow immigrants became intractable, we moved West until the continent seemed conquered. Today, of course, in a global sense there are really no more options to move on or relocate – we share a common atmosphere, common resources, common water supplies, common oceans, at least once the outdated notions of ownership and possession are replaced with a new ethic. The wide open spaces are not so wide or open anymore and neighbors whom we do not see are no longer as tolerant of having our trash dumped on their shores, literally or metaphorically. According to a *New Yorker* article in June 2015, "Project Exodus," a solution might appear to be had in the excitement and hype of moving off Earth and colonizing another planet like Mars. One of the takes from this scenario, including a trip 140 times longer than from Earth to Moon, and the fact that shipping fragile humans is both costly and risky, is the issue of compatibility – both socially and environmentally. Stephen Petranek, author of *How We'll Live on Mars*, points out that pioneers on Mars will not adapt to Mars, but will adapt Mars to their needs; the red planet "will become the new frontier, the new hope, and the new destiny for millions of earthlings." Such bravado, if not straight-out hubris, seems reinforced by the fear that, though man has evolved over millions of years, in the last 60 years atomic weaponry has created the potential for extinguishing ourselves. So, as the thinking goes, emigrating to Mars is the "best hope for the survival of our species."

The astronomer, Frank Drake, however, ponders why, if there exist many planets suitable for life, if life produces intelligent beings, and if intelligent beings figure out how to communicate with other intelligent beings, perhaps the fact we have had no such communication, might mean such civilizations do not exist. Knowing our predilection for killing off other species and the possibility we do the same with ourselves, this self-destructive behavior could explain why there are no beings which travel zipping across the galaxy. Perhaps, as the article concludes, "they've stayed quietly at home, tending their own gardens."

We in "our" country have never had to learn to get along with our neighbors as have Europeans, for example, since we have been blessed historically with an isolated continent. Through failures to cooperate and communicate with our global neighbors, we risk creating lollipop trees in a culture committed to managing others rather than studying, learning and communicating and cooperating from the "fountainhead from within, moving out." A cynic might ask that after messing up one planet, are we simply intending to move on and out, carrying our harmful habits with us? Or have we found with Job the wisdom and understanding to better tend our own gardens at home?

Leonard Bernstein's comic operetta, *Candide,* concludes with the final chorus:

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

So, in the end, instead of lollipop trees, lollipop children, or lollipop cultures and societies, we could grow up educationally and emotionally to replace fear with curiosity and xenophobia with xenophilia, learn how to cooperate globally and ensure one another's survival.

Last spring twenty-seven of my physics students shared some of the curiosity and fun of science with eighteen Head Start children. The relationship between an eleventh grader and a little Head Start girl, shown at the top of this essay says it all. May we all celebrate the joys of *discovering new relationships* as much as they are doing.

George

A VAST Life Member, George Dewey is a former VAST President and former NSTA District VIII Director. He teaches physics in Fairfax County, NBCT since 1999. He can be reached at **george.dewey@fcps.edu.**

STEAM 3.0 – aka "STEM + The Arts!"

PROFESSIONAL DEVELOPMENT WORKSHOP - Presented by VAST, Region IV

Wednesday, July 20th, 2016 – 8:30 a.m. – 2:30 p.m.
Northern Virginia Community College, Mannasses Campus

Since this decade began, we've had four professional development events in region four- the first was supported by a grant for environmental education incorporating STEM in 2012 and three with a STEAM-infused education focus, in 2014-2016. This year's event was held at the Manassas Campus of Northern Virginia Community College, with the venue and site coordination sponsored by NVCC's Systemic Solutions. As in 2014, the Battlefields of Northern Virginia Council of Teachers of Mathematics donated funds to help support its member teachers' attendance and presenters' lunches. NOVEC also donated to support presenters' lunches and program printing costs. Local businesses including banks and Micron Technology provided items for the participants' packets and door prizes.
The nearly forty attendees included administrators, STEM/STEAM coaches, classroom teachers from kindergarten to grade five, middle school science teachers, G/T, art, and music specialists, special education teachers, pre-service, and guests from the Smithsonian. Presenters included college professors, science educators, and a panel of student artists who are now attending college to major in STEM careers.

The keynote speaker, **Laura Malone Elliott,** is a New York Times best-selling author, known for *Under a War Torn Sky.* She recently wrote *Da Vinci's Tiger*- the stunning tale of real-life Renaissance woman Ginevra de'Benci, the inspiration for one of Leonardo da Vinci's earliest masterpieces. "I was blessed to attend a liberal arts university which stressed Renaissance, interdisciplinary thinking, and the wonders of curriculum cross-pollination. I was awarded a MA in Journalism, but actually spent more time taking theatre and music grad courses. My professors taught me to analyze and then synthesize my learning into amalgamated thought. So as a journalist I have written on a wide range of topics, from stem cell research for cancer treatments to domestic violence to ballet choreography to murder prosecutions. Now, as a historical fiction novelist I delve into all manner of history-- from 1968 civil rights to WWII French Resistance workers to 15th century Italian artists. All because I had what is, in essence, was a STEAM education."

After the keynote, attendees had three workshops from which to choose during three breakout sessions.

"Museums, Aviation, Art and Ecology: a multifaceted life experience," was presented by exhibits specialist, **Peter Stern**. He

produces graphics and cabinetry for the National Air & Space Museum and in his free time, he pursues his passion as a pilot and semi-professional aerial photographer. His work has become a larger study of the area as a regional ecosystem, joining the upper reaches of the river to the bay, from both an artistic and ecological perspective. "What is really most interesting to me is how I've come to see the Mid-Atlantic as a regional ecosystem connected by the Susquehanna River and the Chesapeake Bay."

Paige Gibbons Backus works with the PWC Historic Preservation Division as the Historic Site Manager at Ben Lomond Historic Site and Lucasville School, in Manassas, VA. She has many years of experience in multiple facets of museums, formerly serving as a Historian and Volunteer Coordinator for the Fairfax County Park Authority and Museum Educator for the Manassas Museum and Jamestown-Yorktown Foundation. Paige's presentation "STEAM Field Trips with Prince William County's Historic Preservation Division," took attendees on a virtual fieldtrip from Rippon Lodge, a colonial home, to Brentsville Courthouse, an 1820s town, to Ben Lomond, a Civil War hospital- sharing many opportunities to get students involved in STEAM activities.

Two NOVA professors co-presented, "*How STEM became STEAM and Everyone Won: Incorporating the Humanities in STEM Disciplines*." Many global programs, such as population growth, inadequate health care, resource sustainability, and poor water quality requite multiple perspectives and the expertise of many disciplines, from science and economics to geography, history, and politics. **Dr. Gillian Backus** is a professor of Biology at the Loudoun campus where she teaches Anatomy & Physiology and Biology. As a Senior Leadership Fellow at SENCER, Dr. Backus is working on a comprehensive project to coordinate regional STEAM initiatives at the college level. **Dr. Diane Mucci** is the acting Dean of Science & Applied Technology at the Manassas Campus. She assisted in the development and approval of NOVA's associate's degree in Biotechnology and the Biotechnology Lab Technician certificate program. Outside of academia, Diane was a Scientist/Writer/Editor for Lockheed-Martin as a contractor for NIH.

"*To Swing Through the Sky*" traces how jazz and powered flight were born and grew up at the same time, and developed at a surprising, uncannily parallel pace. It pairs unlikely contemporaries and their work: the Wright brothers and Buddy Bolden, Louis Armstrong and Charles Lindbergh, even Howard Hughes and Duke Ellington. The story reveals the common foundations of creative endeavors. **Paul Glenshaw** is an independent writer, educator, filmmaker, and artist. His lifelong passion for the arts and the sciences has led to a career equally divided between art and aviation/science institutions. **Jim Carroll** is Professor of Music at George Mason University with a versatile background ranging from tours with Michael Jackson to Woody Herman. His arrangement and performance of "*The Ballgame*" can be heard at Nationals Park in DC. Jim is a charter member of the Smithsonian Jazz Masterworks Orchestra, in residence at the Museum of American History, and the founder and artistic director of the Metropolitan Jazz Orchestra.

Lillian Ledford grew up north of Charlottesville in the woods of the Blue Ridge Mountains. She has spent time on archeological digs, working with the Youth Conservation Corps at both state and federal parks, and working in public school classrooms. She is an environmental specialist at Blandy Experimental Farm in Boyce, a program through the University of Virginia. Her presentation, "*From Fear to Fantasy: Engaging Science Inquiry through Artistic Expression*," demonstrated how visual, linguistic, or even kinesthetic expression of observations also increases student engagement across a diversity of learning styles and abilities. In her hands-on breakout session, participants explored techniques of art-supported, differentiated, hands-on scientific inquiry.

"*Take One, Action! Student Voices in the Community,*" the presentation by VAST member **Mary Van Dyke**, highlighted how a year-long civic engagement process explored watershed issues. Students observed a church garden, learned to plant native plants, and educated the community about the ecosystem benefits. Using collaboration and play, students constructed narrative and made films. Mary studied architecture as an undergraduate in England, for the Diploma in Architecture at Oxford Polytechnic, and her PhD is from the School of Oriental and African Studies. She practiced architecture in London and Cambridge prior to moving to the US. Mary serves on the VA Cooperative Extension Leadership Council, NOVA Outside, and the Arlington Public Schools Superintendent's Advisory Committee on Sustainability and the APS Science Committee.

Dr. JP Behrens has worked tirelessly in both the fields of science and of art. As a Cognitive Archeological Art Historian, Gallery Artist, and Science Fiction Writer, she presented, "*Excavation of Thought: The Path of Archeological Art History*"- it is both a science and an art. Ancient legends and mythology were the seeds for science fiction- JP is the author of nine science fiction books ranging from pre-school level read-alouds to young adult audiences- from Earth-based to moon-based to Mars-based and then to Europa.

Adalene "Nene" Spivy has led the "*The Region's Newest Educational Resource, the Children's Science Center*" since 2010, during which the Center has served over 100,000 children, families and educators through community outreach programs and at its first operating site at Fair Oaks Mall that opened in 2015. As an engineer, MBA, and non-profit leader, Nene brings a diverse range of experience including systems and process engineering, new product development, and general management for technology businesses; fundraising, advocacy, strategic planning, volunteer management, and board development for non-profits; and over a decade of work with children's museums.

"*Designing Science Units that Apply Math; Enhancing Math Concepts with Infusion into Science*" was presented by VAST member **Susan Bardenhagen**. She believes in STEAM-infused education. There is a natural connection between Math and Science – patterns, organizing, problem-solving - using instructional strategies which cross-cut curricular areas. Whether self-contained or departmentalized, teachers in grades K-8 can infuse Math and Science content by planning their year-long pacing in tandem. Susan studied every subject area in high school through college and continues her diverse lifelong learning today. She designed her dolls' clothes and house furnishings, began playing instruments in third grade; grew to creating outfits and costumes for adults while taking AP/honors classes, being active in intramural sports, and community leadership. Susan has taught grades 2-8 for over forty years and is a regional director for VAST.

The final session was a panel entitled, "*Why STEAM?*" with three recently HS graduated students. **Suhani Pant** was born in Kathmandu, Nepal, came to the US at the age of ten, and attended the Governor's School and her HS's Biotechnology Program while earning course credits from George Mason University- researching the application of local honey to alleviate seasonal allergies using nanotrap particles. She is attending Virginia Tech this fall to major in Electrical Engineering and aspires to earn her PhD in Tissue Engineering. Her interests include all kinds of dance and she also enjoys making AutoCAD drawings and painting in her free time. **Anthony Ratinov** has been playing piano since age four. In HS in, he played in both the jazz band and orchestra, gave numerous recitals including being awarded second place at the International Chopin competition in 2011. As a 2015 Award for Excellence in the Arts winner from the National Society of Arts & Letters, Anthony was invited to perform at the 2016 ceremony at the Kennedy Center. He is attending Yale University, studying molecular engineering. **Vanya Vojvodic** played violin from fourth through ninth grades and graduated from Thomas Jefferson HS for Science & Technology. Her hobby is photography. She was one of three HS interns at George Mason University's Krasnow Institute for Advanced Study in its "Physiological & Behavioral Neuroscience in Juveniles" Lab. She is attending the University of Southern California to study neuroscience.
"I am very excited about implementing some fantastic ideas I learned today at my school this fall. This was my first year being a member of VAST and this was my very first PD with the association and I really enjoyed the three sessions I attended." This was an email received from one of the attendees right after the workshop.

With the pilot program the VAST regional directors planned, thirteen teacher and three college pre-service teacher attendees will have a passport to membership with funds for the event supporting new membership fees! And, in case you're wondering, we **have** started planning **STEAM 4.0** for 2017!

The Virginia Space Grant Consortium

TIME SENSITIVE MATERIAL - DEADLINE OCT. 30, 2016

Virginia Space Grant Consortium (VSGC) is seeking students to participate in **free** educational programs. The programs have an online component engaging students in STEM learning through the exciting work of NASA. Program goals include increasing the number of students in the STEM pipeline; providing engaging enrichment opportunities to encourage ongoing exploration of STEM fields. Developing such skills as time management, organization, communication, and report writing in order to better prepare students for the rigors of STEM careers.

Virginia Aerospace Science and Technology Scholars (VASTS) is a NASA-based program for 11th grade students and STEM teachers who are interested in aerospace-related science, technology, engineering and/or math (STEM). This course focuses on space mission design and human space flight. Master Teacher positions are available.

Virginia Earth Systems Science Scholars (VESSS) is a NASA-based program for 11th/12th grade students and STEM teachers who are interested in Earth Systems Science-related science, technology, engineering and/or math (STEM). This course focuses on Earth Systems Science and the NASA mission that help study these topics. Master Teacher positions are available.

Virginia Space Coast Scholars (VSCS) is a NASA-based STEM program for 10th grade students who are interested in NASA's space, Earth, and airborne science-related missions managed by NASA Wallops Flight Facility. Master Teacher positions are available.

For **high school juniors**, **Virginia Aerospace Science and Technology Scholars (VASTS)** is an interactive online learning course with a space mission design and human space flight theme, culminating in a one-week residential Summer Academy at NASA Langley Research Center in Hampton for those students who qualify. Offered at **no cost** to the student, VASTS consists of eight modules and a final project to be completed from **November 2016 through May 2017** under the guidance of licensed master educators. Based on success in the online coursework, students may be selected to attend a Summer Academy where they interact with NASA scientists, engineers and technologists to design a human mission to Mars. **Students who successfully participate in VASTS can apply to earn 2 college credits for the online course and 2 additional credits for the Summer Academy.**

Please direct students or other faculty to the website for program information and application, http://vasts.spacegrant.org
The deadline for student applications is October 30th, 2016.
For more information on this program, please contact Ian Cawthray, VASTS Education Program Coordinator:
ian.m.cawthray@nasa.gov
Or visit: http://vasts.spacegrant.org

For **High School juniors and seniors, Virginia Earth System Science Scholars (VESSS)** is an interactive, on-line Earth System Science Course featuring NASA scientific research and data. The course will be offered for dual enrollment college credit (statewide through TNCC) for high school juniors and seniors beginning in spring semester 2017.

By combining detailed Earth System Science content with real world data analysis, students will be exposed to a rigorous course that will work across science disciplines to cultivate 21st Century Learning Skills. The program will focus on preparing students for the rigors of college and careers while allowing them to develop strong science-based skills such as critical thinking and inquiry-based problem solving. VESSS will have two components. The first component is an online sixteen-week course running from December through April. The second component is a residential NASA Summer Academy at NASA Langley Research Center for students who perform well in the course. **Students who successfully participate in VESSS can apply to earn 3 college credits, GOL 195, for the online course and 1 additional credit for the Summer Academy.**
Please direct students or other faculty to the website for program information and application, http://vsgc.odu.edu/VESSS/
For more information please contact: joyce.h.corriere@nasa.gov.
The deadline for student applications is October 30th, 2016.

The **Virginia Space Coast Scholars (VSCS)** is a program for **sophomores** focusing on the earth and airborne science, engineering, and technology integral to current missions at NASA Wallops Flight Facility and the Mid-Atlantic Regional Spaceport. This dynamic **(and FREE)** program, designed by the Virginia Space Grant Consortium (VSGC), inspires students who possess technical and/or scientific interests and are motivated to learn about the many different opportunities that NASA offers. The VSCS program features two key elements:
1.) an on-line science, technology, engineering, and mathematics (STEM) learning experience featuring five modules; and
2.) a seven-day residential Summer Academy at NASA Wallops Flight Facility on Wallops Island, VA where selected scholars will learn first-hand from NASA professionals about cutting edge technologies and missions.
Program Information:

- **FREE** Program for **10th Grade Students**
- Online modules covering **NASA aircraft, balloon, and sounding rocket missions** launched or managed at Wallops Flight Facility
- Online course runs from **December 2016 through April 2017**
- Highly successful students will be selected for a week long **Summer Academy at NASA Wallops Flight Facility (Chincoteague, VA)**
- **The deadline for student applications is October 30th, 2016**
- http://vscs.spacegrant.org/ for application and more information. For more information, please contact Kirsten Manning, Education Program Coordinator, at kmanning@odu.edu.

The Center for Wind Energy at James Madison University
Opportunities for Students and Teachers

In 2012, the Center for Wind Energy (**CWE**) at James Madison University hosted ten teams of students (116 people total attendance) for the first **Virginia KidWind Challenge** in Richmond at the Science Museum of Virginia. Since then, **CWE** has hosted ten **KidWind Challenges** around the Commonwealth at museums, schools, universities, and conferences with 129 Middle School teams and 43 High School teams competing; a total of more than 1,300 students, coaches, guests, judges, and volunteers involved.

The **KidWind Challenge** is an engineering design competition in which students compete by constructing wind turbines to generate as much electricity as possible, while learning about the advantages of wind energy. Students are judged in three areas: (i) turbine performance in the wind tunnel; (ii) turbine design quality and process; and (iii) knowledge of the wind industry.

In 2017, the **CWE** will host **three regional qualifying KidWind Challenges at**

1. The Brock Environmental Center in Virginia Beach on March 18th;
2. George Mason University's Volgenau School of Engineering on March 25th; and
3. Dabney S. Lancaster Community College on April 8th.

The top three teams in the Middle School and High School divisions from each regional Challenge will be invited to compete in the ***National KidWind Challenge*** in Anaheim, CA at the AWEA Windpower Conference in May 2017. In preparation for Nationals, **CWE** will offer a Winner's Review Event at JMU in April.

In addition to competing in the standard Challenge events (performance testing and judging), this year the **CWE** is offering a **Bonus Challenge** for teams. These activities will not affect the overall scores of the teams but will potentially earn them a separate award. The Middle School division will be tasked with creating public perception posters that will address a common misconception that might arise during the development of a wind power plant. Posters will be judged by the attendees at the event. The High School division will be challenged with developing a demonstration turbine that incorporates system controls that involve yawing, pitching, or braking. The demo turbine controls will be judged by a team of experts and scored using a standard rubric.

This year, in an effort to encourage new teams to compete in the Challenge, the **CWE** is running a **First-Time Coach Mentoring Program**. Coaches who sign up for this program will be paired with a **JMU ISAT** and/or Engineering student who will mentor and prepare them and their team for their respective Regional Qualifying Challenge. The **JMU** students will, concurrently, be taking a course on wind energy and the **KidWind Challenge** from **CWE** faculty/staff.

Please contact Remy Pangle at panglerm@jmu.edu or 540.568.8768 with your interest or questions.

USA BIOlympiad 2017

2016 TEAM USA RECEIVES 3 GOLD MEDALS and 1 SILVER MEDAL AT THE 27TH IBO, Hanoi, Vietnam!

From left to right:
26th Place: Thomas Xiong
(Seven Lakes High School, Katy, TX)
7th Place: Boyang (Peter) Dun
(Canterbury School, IN)
35th Place: Varkey Alumootil
(Canyon Crest High School, CA)
10th Place: Bowen Jing
(West Lafayette High School, IN)

USA Biology Olympiad (USABO) Registration Opens October 14, 2016
As the premiere biology competition for high school students in the United States, the USA Biology Olympiad (USABO) enriches the life science education of nearly 10,000 talented students annually. It provides the motivation, curricular resources, and skills training to take them beyond their classroom experience to the level of international competitiveness. You and your students are invited to participate in the 2017 USA Biology Olympiad (USABO). Registration opens October 14, 2016. To register, please visit the USABO website https://www.usabo-trc.org/. Registration closes January 16, 2017. For more information on how your school can participate, contact Kathy Frame, USABO Director, at: kframe@cee.org

We look forward to your students' participation!

The CornellLab of Ornithology Birdsleuth Giveaway

Through outdoor education and citizen science, BirdSleuth K-12 at The Cornell Lab of Ornithology want to help 50 educators get children outside and engaged with science. They invite all educators (afterschool educators, teachers, youth development professional, homeschool families, etc.) to apply for a free BirdSleuth STEM kit of their choice for the 2016-2017 school year.
To fill out a survey to enter the giveaway click here:
https://www.surveymonkey.com/r/LLZCYG6
For more information about BirdSleuth kits click here : http://www.birdsleuth.org/kits/
Please send your questions, comments and feedback to: birdsleuth@cornell.edu.

Teachers and Resarchers Exploring and Collaborating

PolarTech is an amazing opportunity for our teachers of Life Science, Ecology and Earth Science.

PolarTREC Learning Resources is a collection of articles, lessons, activities, interactive media, and more for educators, families, students, or anyone interested in teaching or learning more about the science of the Arctic and Antarctica.

Many of these resources have been aggregated into "Collections". The collections are a chance to find all types of resources that all pertain to a specific discipline or location.
https://www.polartrec.com/resources

PolarTREC expeditions to the Arctic and Antarctica 2007 to 2015 on the website. You can access archived expeditions to the Arctic that took place through TREC in 2004-2006. Journals, photos, ask the team forums, and information about each expedition can be found by following the links to all the expeditions. Use the Expedition Search feature to narrow your choices or find a particular expedition or region.

Projects are expeditions that had teachers for more than one year. Learn more about the science and see all the teachers and researchers involved in the research project over two or more years. You can also access all the related project resources (presentations, lessons, PolarConnect events, etc.) related to the projects.

https://www.polartrec.com/expeditions

FLOWER GARDEN BANKS NATIONAL MARINE SANCTUARY

Come School with Us!
As students and teachers head back to school for the new year, we'd like to remind you of the various education resources available from **Flower Garden Banks National Marine Sanctuary.**

For starters, we have a full page of downloadable lessons and activities for all ages. From coloring pages and puzzles to art, role-playing and data analysis, we've got you covered.

If it's more information you want on a particular topic, we've got that too. Topics include Coral Basics, Coral Spawning, Coral Bleaching, Invasive Species, etc. http://flowergarden.noaa.gov/education/coralbasics.html

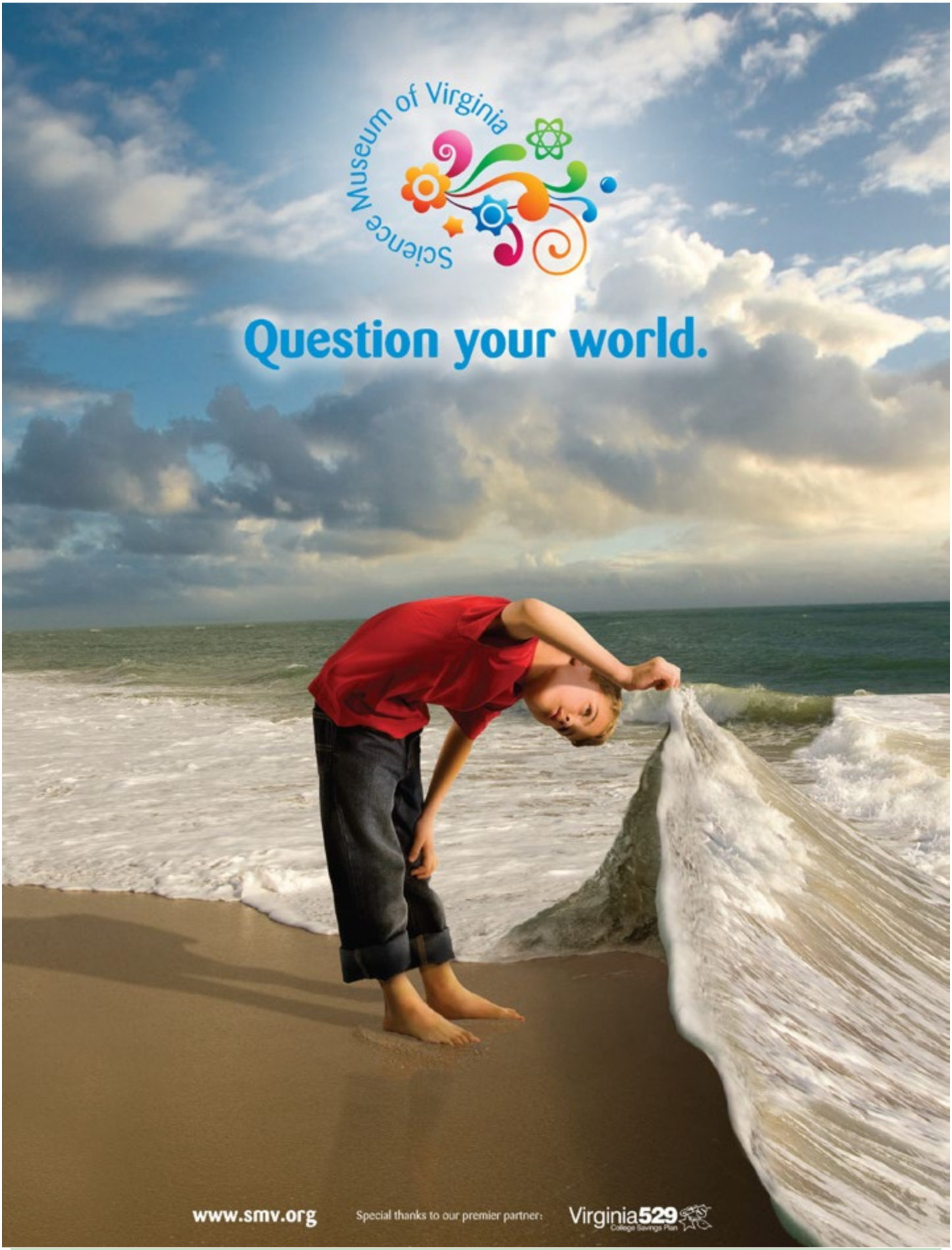
You want images? We've got more than you can imagine. Use the search feature of our website to find images of interest or check out the online Media Library that has photos from all of your national marine sanctuaries, including about 500 of our best! https://marinelife.noaa.gov/media_lib/default.aspx

Be sure to also check out our Students, Teachers, and Workshop pages for more ways to discover what's going on at FGBNMS and how you can share it with students. It's all in the Education section of our website. http://flowergarden.noaa.gov/education/education.html

http://flowergarden.noaa.gov

This is an electronic distribution list run by Flower Garden Banks National Marine Sanctuary (FGBNMS). This list server was created to provide subscribers with information and the latest news about sanctuary management and research, upcoming events, and opportunities for involvement. To subscribe to this or any other FGBNMS email lists, please visit http://go.usa.gov/bqxT

Lessons: http://flowergarden.noaa.gov/document_library/eddocuments.html


Science Museum of Virginia
Question your world.
www.smv.org
Special thanks to our premier partner:
Virginia529
College Savings Plan

2016 Virginia Naturally Schools
School Recognition List

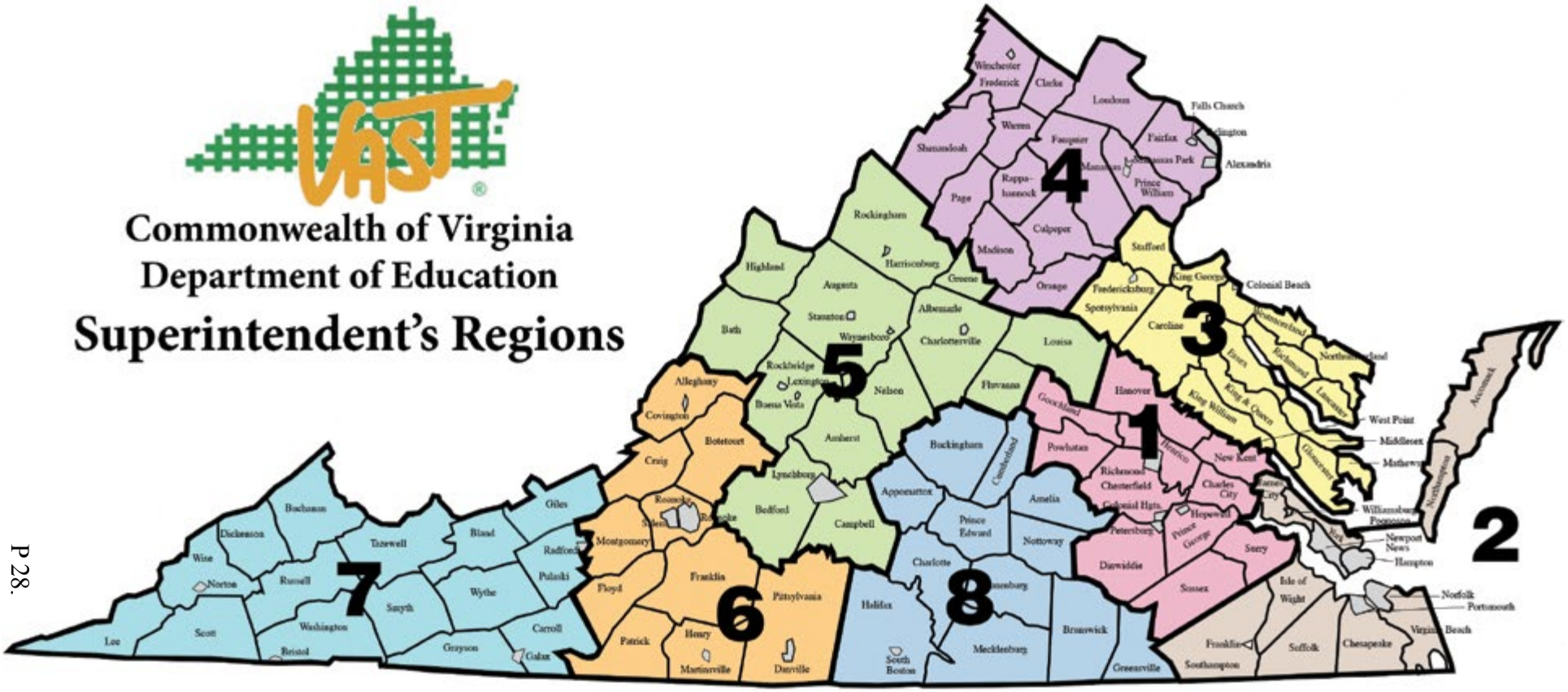
The schools listed below have been recognized for their efforts in supporting environmental conservation and stewardship. The years the schools have been recognized for continued effort is noted beside the name. Schools must submit a plan for the following year and carry it through in addition to meeting additional criteria in order to be recognized in additional years.

1.Achilles Elementary School, Gloucester Co.Schools, 1 year
2.Bedford Hills Elementary School, Lynchburg City Schools, 3 years
3.Belvedere Elementary School, Fairfax Co.Schools, 4 years
4.Blue Ridge Middle School, Loudoun Co.Pub.Schools, 10 years
5.Byrd Elementary School, Goochland Co.Schools, 6 years
6.Caroline Middle School, Caroline Co.Schools, 2 years
7.Castlewood High School, Russell Co.Schools, 6 years
8.Cedar Lane Elementary School, Loudoun Co.Schools, 4 years
9.Central Elementary School, Rockbridge Co.Schools, 5 years
10.Central High School, Shenandoah Co.Schools, 9 years
11.Chesapeake Bay Governor's School, Middlesex Co.Schools, 10 years
12.Churchill Road Elementary School, Fairfax Co.Schools, 3 years
13.Clover Hill High School, Chesterfield Co.Schools, 9 years
14.Coles Elementary School, Prince William Co.Schools, 5 years
15.Colvin Run Elementary School, Fairfax Co.Schools, 1 year
16.Cub Run Elem School, Rockingham Co.Schools, 2 years
17.Daniels Run Elementary School, Fairfax Co.Schools, 10 years
18.Dominion High School, Loudoun Co.Schools, 12 years
19.East Rockingham High School, Rockingham Co.Schools, 1 year
20.Echo Lake Elementary School, Henrico Co.Schools, 1 year
21.Elkton Middle School, Rockingham Co.Schools, 1 year
22.Enderly Heights Elementary School, Buena Vista City Schools, 4 years
23.Eureka Elementary School, Charlotte Co.Schools, 9 years
24.Fulks Run Elementary School, Rockingham Co.Schools, 1 year
25.Gate City High School, Scott Co.Schools, 1 year
26.Gate City Middle School, Scott Co.Schools, 1 year
27.Glenvar High School, Roanoke Co.Schools , 10 years
28.Greenbrier Intermediate School, Chesapeake City Schools, 12 years
29.Harmony Middle School, Loudoun Co.Schools, 1 year
30.J Michael Lunsford Middle School, Loudoun Co.Schools, 5 years
31.John Wayland Elementary School, Rockingham Co.Schools, 17 years
32.Kempsville Elementary School, VA Beach City Schools, 3 years
33.Kersey Creek Elementary School, Hanover County School, 10 years
34.Kling Elementary School, Buena Vista City Schools, 1 year
35.Lacey Springs Elementary School, Rockingham Co.Schools, 1 year
36.Landsdown Middle School, VA Beach City Schools, 1 year
37.Lanier Middle School, Fairfax Co.Schools , 5 years
38.Lee Davis High School, Hanover Co.Schools, 8 years
39.Linville-Edom Elementary School, Rockingham Co.Schools, 2 years
40.Marshall Early Learning Center, Newport News City Schools, 1 year
41.Matoaca High School, Chesterfield Co.Schools, 1 year
42.Maybeury Elementary School, Henrico Co.Schools, 1 year
43.Mill Run Elementary School, Loudoun Co.Schools, 2 years
44.Maury River Middle School, Rockbridge Co.Schools, 2 years
45.Montevideo Middle School, Rockingham Co.Schools, 2 years
46.Mount Daniel Elementary School, Falls Church City Schools, 7 years
47.Mountain View Elementary School, Rockbridge Co.Schools, 3 years
48.Natural Bridge Elementary School, Rockbridge Co.Schools, 2 years
49.North Branch School, Independent School Afton , 17 years
50.Park View High School, Loudoun Co.Schools, 6 years
51.Patrick Copeland Elementary School, Hopewell City Schools, 9 years
52.Peak View Elementary School, Rockingham Co.Schools, 2 years
53.Peasley Middle School, Gloucester Co.Schools, 17 years
54.Pleasant Valley Elementary School, Rockingham Co.Schools, 1 year
55.Poquoson Elementary School, Poquoson City Schools, 3 years
56.Rivers Edge Elementary School, Henrico Co.Schools , 9 years
57.Rolling Ridge Elementary School, Loudoun Co.Schools, 1 year
58.Round Hill Elementary School, Loudoun Co.Schools, 1 year
59.Short Pump Elementary School, Henrico Co.Schools, 6 years
60.Stafford Elementary School, Stafford Co.Schools, 10 years
61.Sterling Elementary School, Loudoun Co.Schools, 5 years
62.Steward School Independent School, Richmond, 3 years
63.Sutherland Elementary School, Dinwiddie Co.Schools, 6 years
64.Twin Hickory Elementary School, Henrico Co.Schools, 6 years
65.Waples Mill Elementary School, Fairfax Co.Schools, 1 year
66.Ware Academy Independent School, Gloucester , 4 years

For more information about Virginia Naturally School Recognition Program contact: Suzie Gilley, Virginia Naturally Schools Chairperson, VA Dept. Of Game and Inland Fisheries, 804-367-0188 Suzie.gilley@dgif.virginia.gov
http://www.dgif.virginia.gov/education/school-recognition/

Commonwealth of Virginia Department of Education

Superintendent's Regions



Region 1: Central	Region 2: Tidewater	Region 3: Northern Neck	Region 4: Northern Virginia	Region 5: Valley	Region 6: Western	Region 7: Southwest	Region 8: Southside
Charles City	Accomack	Caroline	Alexandria	Albemarle	Alleghany	Bland Bristol	Amelia
Chesterfield	Chesapeake	Colonial Beach	Arlington	Amherst Augusta	Botetourt	Buchanan	Appomattox
Colonial Heights	Franklin Hampton	Essex	Clarke Culpeper	Bath Bedford	Covington	Carroll	Brunswick
Dinwiddie	Isle of Wight	Fredericksburg	Fairfax	Buena Vista	Craig	Dickenson	Buckingham
Goochland	James City-Williamsburg	Gloucester	Falls Church	Campbell	Danville	Galax Giles	Charlotte
Hanover	Newport News	King George	Fauquier	Charlottesville	Floyd	Grayson	Cumberland
Henrico	Norfolk	King William	Frederick	Fluvanna Greene	Franklin	Lee Norton	Greensville
Hopewell	Northampton	King and Queen	Loudoun Madison	Harrisonburg	Henry	Pulaski	Halifax
New Kent	Poquoson	Lancaster	Manassas	Highland Lexington	Martinsville	Radford	Lunenburg
Petersburg	Portsmouth	Mathews	Manassas Park	Louisa Lynchburg	Montgomery	Russell	Mecklenburg
Powhatan	Southampton	Middlesex	Orange Page	Nelson	Patrick	Scott Smyth	Nottoway
Prince George	Suffolk	Northumberland	Prince William	Rockbridge	Pittsylvania	Tazewell	Prince Edward
Richmond	Virginia Beach	Richmond	Rappahannock	Rockingham	Roanoke City	Washington	
Surry	York	Spotsylvania	Shenandoah	Staunton	Roanoke County	Wise Wythe	
Sussex		Stafford	Warren Winchester	Waynesboro	Salem		
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		West Point					

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Is Your Address Changing?

Be sure to let VAST know your new contact information. Neither the post office or the Internet will forward our newsletters. Please e-mail **Barbara Adcock, Membership chair: membership@vast.org**

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Join the VAST community on line. "LIKE" the Virginia Association of Science Teachers so that the latest science educational news will appear on your page.
Region 2 has a new Facebook page. Please visit and join our community at:
https://www.facebook.com/Region2VAST.

Please consult the website for up to date information, VAST forms for awards and mini-grants, advertising and current PDI information: www.vast.org

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.***

Please send articles, letters to the editor, or labs by the submission deadline, Jan. 1, 2017, for inclusion in the next paper PDI VAST Newsletter.

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