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updates, registration, and forms.

# The Science Educator

Fall 2013

A publication of VAST, The Virginia Association of Science Teachers

Vol. 62, No.2

## *Sustain Science*

### **Be a Professional: Attend the VAST PDI! Early Bird DeadLine: October 18th**

Log on to the VAST website today to register and get the lower rate. We hope to see you there.



The speakers and session leaders are ready, the program is at the printer, tote bags are ordered, meals are planned, exhibitors are packing and exciting events are being planned to make this an Annual PDI to be remembered! Thanks to our PDI Committee and the VAST board, the difficult tasks are completed to provide you a valuable Professional Development Institute.

What do you want or need to learn more about? Are you

elementary, middle school or secondary? We have experts in all levels and science curriculums who will present and share their expertise with you.

Go on line and download the August issue of the Science Educator for the list of concurrent session. That issue, as well as the website, has information about our speakers, Thursday workshops, field trips and all the special events that take place on Friday and Saturday.

***Don't Delay, Register Today! It's easy, just go to our website, [www.vast.org](http://www.vast.org), and follow the directions.  
You won't be disappointed!***



From the Executive Director



## Where were you?

*Have you ever thought about going somewhere and not gotten there?*

*Have you ever made up every reason why you did not need to go:*

It will take to much time.  
I don't have the time to afford to go.  
I can learn it elsewhere.  
I won't miss anything.

*We all have done this before and had regrets afterwards.*

*SO, don't be the one that thought about going and didn't....*

*Be the one that came and...*

was glad you used your time wisely,  
was glad that you learned something new,  
and glad you did not miss anything.

See you in November!

*Susan Booth*

## VAST PDI 2013

### Dates to Remember

**October 18, 2013** - Early Bird cut-off date  
for professional registration - \$160.00

**October 18, 2013** - Early bird cut-off date  
for student registration - \$80.00

**November 5, 2013** - cut-off date for  
standard registration - \$190.00

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# What You can do at the VAST PDI this year!

## You are invited to join us in Norfolk



VAST Annual Meeting

on

### Thursday November 14, 2013

- \* participate in Pre-Conference Institutes
- \* go on an AWESOME Field Trip
- \* attend General Session # 1
- \* visit the Exhibit Hall & pick up resources
- \* network



Contests

&

### Friday November 15, 2013

- \* attend concurrent sessions & get great ideas!
- \* attend General Sessions # 2 & # 3
- \* visit the Exhibit Hall & pick up resources
- \* attend the awards dinner (ticketed)
- \* visit Nauticus (free)
- \* network



Awards



Speakers

&

### Saturday November 16, 2013

- \* attend concurrent sessions & get great ideas!
- \* attend General Session # 4 & # 5
- \* visit the Exhibit Hall & pick up resources
- \* network



Field Trips



I'll see you there



Exhibit Hall

*Shirley Sypolt* – 2013 President-Elect of VAST



# COMMONWEALTH of VIRGINIA

DEPARTMENT OF EDUCATION

P.O. BOX 2120

RICHMOND 23218-2120

DATE: June 21, 2013

TO: Science Educators

FROM: Eric Rhoades, Director  
Office of Science and Health Education

Barbara Young, Science Specialist  
Office of Science and Health Education

Jim Firebaugh, Science and Mathematics Specialist  
Office of Science and Health Education

SUBJECT: 2013 Virginia Association of Science Teachers  
Professional Development Institute

We are thankful that science educators, like you, take the opportunity to use the VAST PDI as a part of their professional development plan in order to expand and promote excellence in science education, as well as science literacy in Virginia. Your focus on professional growth makes the Commonwealth a better place for Virginia students to learn.

The Virginia Association of Science Teachers (VAST) has spent the past year planning for the 2013 Professional Development Institute (PDI) that will be held November 14-16, 2013 at the Norfolk Waterside Marriott in Norfolk, Virginia. This year's PDI supports the *Science Standards of Learning* (SOL) by offering over 200 concurrent sessions, several field trips, and nationally known keynote speakers. As an educator, you will hear exciting speakers, network with fellow science teachers from all over Virginia, gain new ideas to enhance their content knowledge, and experience cutting-edge technology. The VAST PDI also provides you with the opportunity to earn recertification points as well as the option of earning college credit.

Regardless of the level of science you teach, you will find many topics of interest with which to build expertise. VAST advocates for high-quality science instruction for all students at all levels, and the PDI provides an avenue for communication among members of the science teaching community. We hope you get as much out of your VAST membership and attendance at the PDI as we do.





## 2013 Presidential Awards for Excellence in Mathematics and Science Teaching: Science State Finalists

The Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST) Program was established in 1983 by The White House and is sponsored by the National Science Foundation (NSF). The program identifies outstanding mathematics and science teachers, kindergarten through 12th grade, in each state and the four U.S. jurisdictions. These teachers serve as models for their colleagues and will be leaders in the improvement of science and mathematics education. The competition alternates each year between teachers of grades K-6 and teachers of grades 7-12.

The 2013 PAEMST Awardees will be announced in the Spring of 2014. Each state's Presidential Awardee will receive a \$10,000 award from the National Science Foundation. Each PAEMST Awardee will also be invited to attend, along with a guest, recognition events in Washington, D.C. during a weeklong recognition in 2014. These events will include an award ceremony, a Presidential Citation, meetings with leaders in government and education, sessions to share ideas and teaching experiences, and receptions and banquets to honor recipients.

The four PAEMST Virginia state finalists for grades 7-12 science are **Stephen Biscotte**, a biology teacher at Cave Spring High School in Roanoke County, **Timothy Couillard**, a physics teacher at James River High School in Chesterfield County, **Susanne Dana**, a chemistry teacher at Blacksburg High School in Montgomery County, and **Anne Moore**, a middle school science teacher at Robius Middle School in Chesterfield County.

"These teachers are national role models for educators to emulate; for students to admire; and for parents, administrators, and communities to nurture," notes Rita Colwell, NSF director. PAEMST Awardees have been shown to devote more time to professional development, to incorporate innovative approaches into their classroom teaching, and to be more likely to use computers and other technologies in their classrooms.

*For more information about the PAEMST program or to nominate a teacher, please visit [www.paemst.org](http://www.paemst.org) or contact Eric M. Rhoades ([eric.rhoades@doe.virginia.gov](mailto:eric.rhoades@doe.virginia.gov)).*



# VAST Professional Development Institute

## Norfolk Waterside Marriott

### November 14-16, 2013

## *Sustaining Science!*

#### Thursday, Nov. 14

VAST Professional Development Institute  
Norfolk Waterside Marriott  
November 14-16, 2013

8:30 am	VSELA Program, see VSELA program
8:45 am	Fieldtrip departs Hotel
9:00 am-Noon	Pre-Conference Martinson Center workshop
9:15 am	Fieldtrips departs Hotel
12:00 noon - 1:00 pm	VSELA, Delta, CPO and workshop Lunches
12:30 pm	Fieldtrip departs Hotel
1:00 pm - 4:00 pm	Pre-Conference Institutes, Sponsored by Delta Education and CPO Science
2:00 pm - 5:15 pm	VAST Registration Desk Open
5:30 pm - 6:30 pm	General Session One (Joseph Murphy-Navy) Sponsored by VSELA
6:30 pm - 8:30 pm	VSELA and VAST Reception (Exhibit Hall Open)
8:45pm - 9:15 pm	VAST Board of Directors Meeting

#### Friday, Nov. 15

7:00 am - 4:30 pm	VAST Registration Desk Open
6:45-7:45 am	Continental Breakfast-one hour replenish only buffet
8:00 am - 9:00 am	General Session Two (Dr. Paul Aravich-EVMS) Sponsored by VSELA
9:15 am - 10:05 am	Concurrent Session A
10:00 am - 6:00 pm	Exhibit Hall Open
10:20 am - 11:10 am	Concurrent Session B
11:25 am - 12:15 pm	Concurrent Session C
12:15 pm - 1:15 pm	Visit the Exhibit Hall (It is the only thing open)
1:30 pm - 2:20 pm	Concurrent Session D
2:35 pm - 3:25 pm	Concurrent Session E
3:40 pm - 4:30 pm	Concurrent Session F
4:00 pm - 6:00 pm	Celebration of Science in Exhibit Hall, Sponsored by Delta Education
6:00 pm - 6:30 pm	Ticketed dinner
6:30 pm - 7:30 pm	Awards Presentations – PAEMST Awards, VAST Awards, VABT Awards General Session Three (Eric Rhoades- VDOE)
8:00 pm - 10:00 pm	Nauticus – Enjoy the walk!

#### Saturday, Nov. 16

7:00 am - 12:00 pm	VAST Registration desk open
7:15 am	Continental Breakfast
8:00 am - 9:00 am	Concurrent Session G
8:30 am – 12:00 noon	Exhibit Hall Open
9:15 am – 10:05 am	General Session Four - (Kaleela Thompson, Joan Harper-Neely, Charles Hurd- STEM) & (VAST Annual General Membership Meeting)
10:20 am - 11:10 am	Concurrent Session H
11:00 am -11:45 am	Visit the Exhibit Hall (It is the only thing open)
11:45 am - 12:35 pm	Concurrent Session I
12:50 pm - 1:40 pm	Concurrent Session J
2:00 pm - 3:00 pm	General Session Five (Chris Ludwig- Flora of Virginia) - Door Prizes

### **Congratulations Melanie Foreman: PDI Cover Art Work 2013**

The 2013 VAST PDI program cover was designed by **Melanie Foreman**, a 15- year-old student at Cosby High School in Chesterfield, Virginia. Melanie's design was one of over 270 submissions in the 2nd annual VAST Art Contest. Congratulations to Melanie and all the other students who submitted artwork. Excellent job and keep up the amazing art!

*Never forget that "Science is Art!"*

**Melanie's art will be seen at the PDI in November!**

# BALLOT



The Nominating Committee presents the following slate of officers for election at the VAST Annual Meeting, Saturday, November 16, 2013 in Norfolk. Elected officers will begin their terms January 1, 2014.

**Nominating Committee for 2013: Juanita Jo Matkins, Brita Hampton, Delores Dalton Dunn, and Don Foss**

*Nominating Committee Chair for 2013: Juanita Jo Matkins*

**For President Elect (2014)** This officer will become President in 2015

**Jenny Sue Flannagan** ..... Yes No  
Dr. Jenny Sue Flannagan has taught middle/high school science, served as the Middle/Elementary Science Coordinator for Virginia Beach City Public Schools and currently is the Director for the Martinson Center for Mathematics and Science in the School of Education at Regent University where she is also an Associate Professor. Dr. Flannagan currently serves as the Communication Chair for VAST.

**For Treasurer (2014-2017)**

**Jimmy Johnson** ..... Yes No  
Jimmy has been a classroom teacher for 33 years and currently teaches 5th grade science at Elmont Elementary in Hanover County. He is a former President of VAST and has served as VAST treasurer since 2006.

**For Director, Region I (2014-2016)**

**Kim Dye** ..... Yes No  
Kim has taught grades 4/5 for 28 years. She has served as the Region I Director for the previous two years while in the position of Science Curriculum Specialist for Hanover County. Her passion is for providing quality professional development to encourage engaging science instruction at all levels.

**For Director, Region III (2014-2016)**

**Sherrie Roland & Leslie Lausten** (Codirectors) ..... Yes No  
•**Leslie Lausten** has been teaching elementary school science for 23 years in Stafford County, VA. She has presented at the VAST conferences for the past five years as well as served as Codirector for Region III.  
•**Sherrie Roland** has taught in elementary school for 25 years grades K-4. She currently teaches fourth grade in Stafford County and is the science lead for her school. Sherrie served as co-director for VAST Region 3 for 2012-2013.

**For Director, Region V (2014-2016)**

**Eric Pyle** ..... Yes No  
Eric has been a Professor of Geoscience Education at James Madison University for the last 9 years and is currently Coordinator of Science Teacher Preparation in the College of Science & Mathematics at JMU. He has attended VAST professional development institutes since 2003. He is a Past-President of VAST and the chair of the Earth Science committee.

**For Director, Region VII (2014-2016)**

**Diane Tomlinson** ..... Yes No  
Diane is semi-retired after serving 31 years in various positions in Russell County, VA. She is pursuing her Ph.D. in Career and Technical Education at Virginia Tech. She is currently the Region VII Director.

## **Proposed addition to VAST's Operating Procedures:**

At its November 8, 2012 meeting, the VAST Board approved the formation of a new Standing Committee to be called the Advocacy Committee. This change to the Operating Procedures is to be presented to the membership for approval at the November 16, 2013 Annual Meeting.

The role of the Advocacy Committee will be to work with the Board and membership in support of legislative advocacy in line with VAST Policies.

\_\_\_\_\_Approve \_\_\_\_\_Do Not Approve

If you will not be present at the Annual Meeting, please cast an absentee ballot.  
Deadline for receipt of ballots is November 2, 2013. Return your completed ballot to:  
Juanita Jo Matkins, 624 Yanceyville Rd., Louisa, VA 23093

## Sustaining Science!

**Speakers** - At this year's PDI we will have five General Sessions and we are thrilled to have the following speakers who will present. *Please join us for our annual PDI at the beautiful Marriott Waterside Hotel in Norfolk.*

### General Session One

Thursday, Nov 14, 5:30 - 6:30 PM



### **Joseph Murphy- United States Navy**

**Mr. Joseph Murphy** was graduated from the United States Naval Academy in May 1981. He subsequently earned a master's of science degree in financial management from the Naval Postgraduate School. During his Navy career, Mr. Murphy served as Machinery & Boilers Officer and as Main Propulsion Assistant in USS Iwo Jima (LPH 2) from 1982-1985; as Fire Control Officer in USS Ticonderoga (CG 47) from 1985-1987; as Combat Systems Officer and Operations Officer in USS Chosin (CG 65) from 1989-1993; and as Executive Officer in USS Arleigh Burke (DDG 51) from 1994-1995.

He commanded USS Gonzalez (DDG 66) from 1998-2000, and Destroyer Squadron Twenty Eight from 2002-2003 Ashore. Mr. Murphy served on the staff of the Secretary of the Navy in the Navy's Appropriations Matters Office, where he performed Congressional budget liaison duties from 1995-1996; as Deputy Executive Assistant to the Chief of Naval Operations from 1996-1997, and as Requirements Chief at U.S. Joint Forces Command from 2000-2001; and as Requirements Chief (N80) at U.S. Fleet Forces Command from 2003-2004. Since his 2004 selection as a Senior Executive, Mr. Murphy has served in various SES positions at U.S. Fleet Forces, including Assistant Deputy Chief of Staff, Capabilities and Resources Integration (N8); Assistant Deputy Chief of Staff, Fleet Readiness and Training (N4/N7); Deputy Chief of Staff, Fleet Installations and Environmental Readiness (N46).

### General Session Two

Friday, Nov 15, 8:00 - 9:00 AM



### **Dr. Paul Aravich - Professor at Eastern Virginia Medical School**

**Dr. Aravich** is a behavioral neuroscientist and Professor of Pathology and Anatomy, of Geriatrics, and of Physical Medicine and Rehabilitation at Eastern Virginia Medical School, Norfolk, Virginia. He is a recipient of a Virginia State Council of Higher Education Outstanding Faculty Award, which is the highest honor for faculty given by the Commonwealth of Virginia for excellence in research, teaching and service. He sits on the boards of Alternatives, a nationally recognized youth empowerment organization; the I Need a Lighthouse Foundation for youth depression and suicide awareness; and the Buckley Foundation for brain injured survivors. He has published widely; given numerous statewide, national and international scientific presentations; provided many teacher training presentations; and is actively involved with Eastern Virginia Medical School's global health efforts. Dr. Aravich performs public policy advocacy for brain injury, mental illness & Alzheimer's disease at the local, state and national levels.

Check out his TEDx NASA talk: <http://www.youtube.com/watch?v=-SfjsqnMRVc> and his interview on becoming a neuroscientist at the PBS website for the *Secret Life of the Brain*

<http://www.pbs.org/wnet/brain/outreach/episode4.html> .

### General Session Three

Friday, Nov 15, 8:00 - 10:00 PM



### **Eric Rhoades -**

**Director of the Office for Science and Health Education for the Virginia Department of Education**

**Eric Rhoades** - Join your fellow science teachers for the Friday night dinner, which will be followed by speaker, Eric Rhodes, and the award presentations at the hotel. Eric Rhoades will present Setting a New Trendline for Science Education. The festivities will then move to Nauticus for a fun-filled and informative evening.

Teachers and science leaders are working diligently to engage students in exciting and meaningful science education throughout the Commonwealth of Virginia. Eric Rhoades will discuss the current efforts teachers, schools, school divisions, and the Virginia Department of Education is making to encourage the phrase "investigate and understand" come to life for Virginia students and teachers.

Eric Rhoades is the Director of the Office for Science and Health Education for the Virginia Department of Education where he coordinates programs such as the Science Standards of Learning, Mathematics and Science Partnership grant, and Green Ribbon Schools award program. He most recently came from George Mason University where he was the Director of the Virginia Initiative for Science Teaching and Achievement (VISTA). Eric is also the former Supervisor of Mathematics and Science for Stafford County Public Schools and Science Coordinator in Powhatan County Public Schools. He has taught Physical Science, Biology, and Chemistry.



## General Session Four

Saturday, 11/16, 9:15-10:05 am

### Kaleela Thompson, Joan Harper-Neely, and Charles Hurd - STEM



**Kaleela Thompson** is a 14-year-old ninth grade student at Kecoughtan High School in Hampton, Virginia. She recently won the 2013 National Science Teachers Association (NSTA)'s Angela Award, which is given annually to honor one female student in grades 5-8, who has a strong connection to science. She has also won a Prudential President's Volunteer Service Award, a Office Depot Adopt a Small Business Award, and was a distinguished finalist for the Prudential President's Volunteer Award. Kaleela has also received numerous grants to fund her volunteer efforts and has presented at state and national conferences. Kaleela describes herself as "a budding environmental entomologist of the 21st century" whose love of science began at age four, when her mother bought her a butterfly habitat. She enjoys studying insects, reptiles, and amphibians so much that she decided to write a series of science picture books—interactive green books with read-along CDs and sight-word bookmarks—to motivate kids to go outside and discover the wonder of nature. Her first book *Oh Where Oh Where is my Swallowtail?* uses bright and colorful photographs and illustrations to help children solve the mystery of the missing butterfly. The story introduces the beginning reader to the wonderful critters that live in our backyard. Her passion has evolved into building partnerships within the community with local garden nurseries, the local natural history museum, butterfly societies and sharing her knowledge with students across the state. The MacDonald Garden Center in Hampton, Virginia has provided her with a temporary butterfly house at the garden center where Kaleela can continue to observe butterflies in various life cycle stages.



**Joan Harper-Neely** has 23 years of teaching experience and is the Engineering and Technology Specialist at Cooper Elementary Magnet School for Technology in Hampton, Virginia. She is a National Board Certified Teacher and was recently named Pitsco Education Teacher of the Month for her innovative and creative Children's Engineering and STEM curriculum delivery at Cooper. She is the recipient of the Virginia Technology and Engineering Education Association (VTEEA)'s 2013 Virginia Elementary School Technology Education Teacher of the Year, which makes her eligible for the International Technology and Engineering Educators Association (ITEEA)'s 2013 Technology Education Teacher of the Year Award. She serves on the Virginia Children's Engineering Council (VCEC) and is the editor for their Children's Engineering Journal. "I love helping students discover their talents and strengths. It is very rewarding to observe a student put a great deal of effort into a project and then beam with pride when they succeed."



**Dr. Charles Hurd** is the coordinator for Engineering and Technology Education in Virginia Beach City Public Schools. His primary areas of responsibility include Engineering and Technology Education programs in the secondary schools. He is a project lead for the STEM Robotics Challenge (SRC). He will discuss the STEM robotics challenge and the role of Technical and Career Education in engaging elementary, middle and high school students in after-school activities. The concepts of the SRC include supporting sustainability, mechatronics and 21st century skills, including collaboration, creative thinking, and team work utilizing the engineering design process. Dr. Hurd has taught technology education in high school and middle school. He has served in various administrative capacities in the Richmond and Tidewater Virginia areas including principal and assistant principal and has recently moved back to the beach. His most recent presentations regarding STEM were at the Association of Career and Technical Administrators conference in Atlanta, Georgia and the Virginia Association of Career and Technical Education Administrators conference in Roanoke, Virginia.

## General Session Five

Saturday, 11/16, 2:00-3:00pm

### Chris Ludwig - Flora of Virginia - Worth the 250 Year Wait!



**Chris Ludwig** - Virginia for its landmass has the greatest diversity of vascular plant species of any state in the U.S. The Colony of Virginia has the first flora (a manual describing the plants of an area) the *Flora Virginica* of any of the original thirteen colonies. The last edition of the *Flora Virginica* was published by John Clayton (an early Virginia botanist) and J. Gronovius in 1762. In December 2012, 250 years after the last publication of the *Flora Virginica*, *Virginia's first modern flora, the Flora of Virginia*, was published. In this presentation, Chris Ludwig, co-author of the *Flora of Virginia* and director of the Foundation of the Flora of Virginia Project, will share insights on how this modern work was developed and why it is relevant to science educators in Virginia. For more about the Flora Book visit: <http://www.floraofvirginia.org/> and <http://ideastations.org/video/virginia-currents-flora-of-virginia/elbert-watson-2013-02-11> to view a *Virginia Currents* program with Chris Ludwig and Marion Lobstein a member of the Board of Directors of the Flora of Virginia Project.

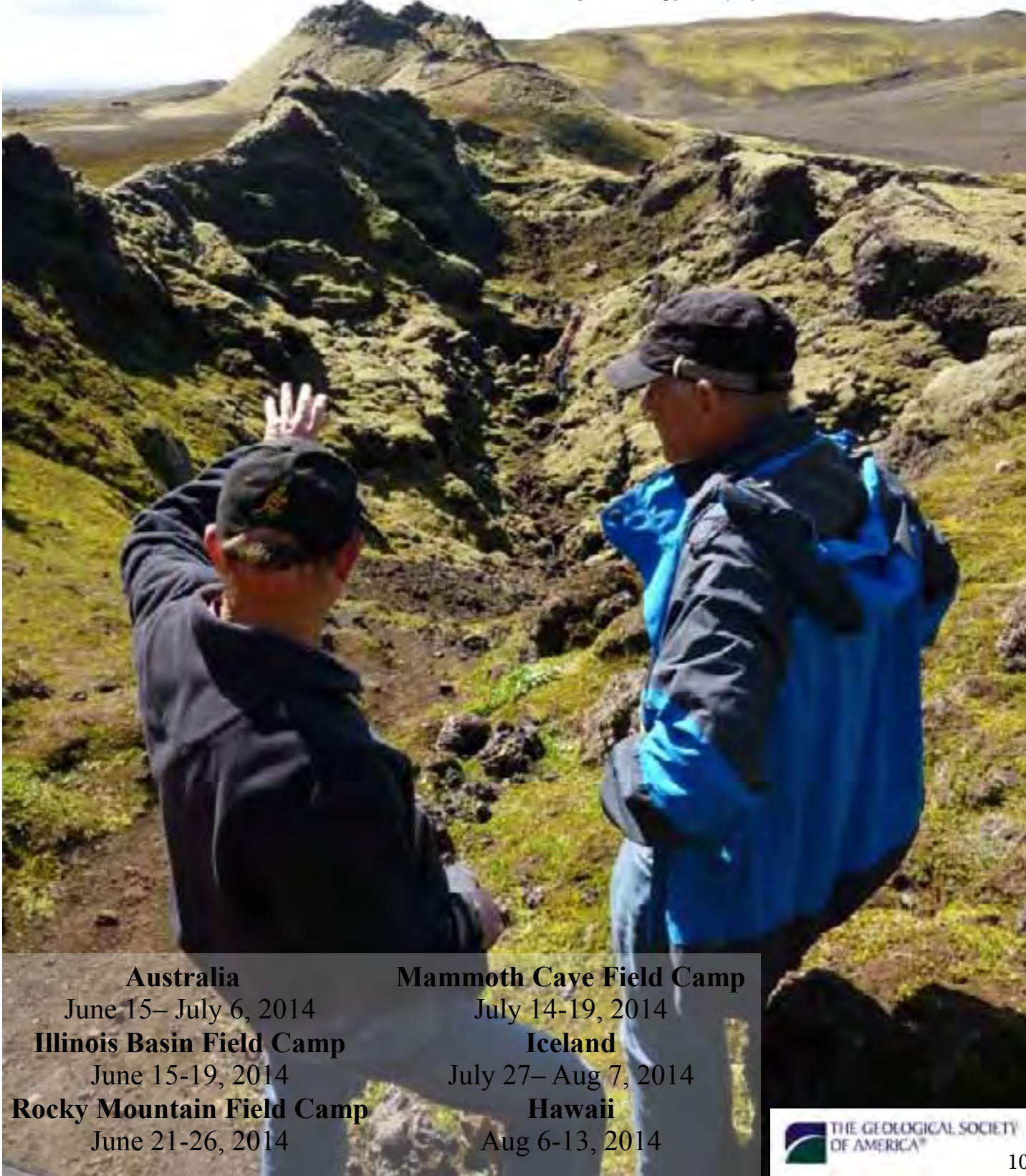


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Contact Davida Buehler for information on Field Camps at [dbuehler@geosociety.org](mailto:dbuehler@geosociety.org)



**Australia**

June 15– July 6, 2014

**Illinois Basin Field Camp**

June 15-19, 2014

**Rocky Mountain Field Camp**

June 21-26, 2014

**Mammoth Caye Field Camp**

July 14-19, 2014

**Iceland**

July 27– Aug 7, 2014

**Hawaii**

Aug 6-13, 2014

Online registration for the  
VAST PDI 2013 on the VAST  
website at [www.vast.org](http://www.vast.org).

Check the VAST website often for  
updates and more information.

Check-in and Check-out: Check-in:  
4:00 PM • Check-out: 11:00 AM



### High-Speed Internet

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Discounted Daily Group rate \$4.95

## NORFOLK WATERSIDE MARRIOTT VAST PDI

Earliest Group Check-in: Tue Nov 12, 2013 • Check-out: Sun Nov 17, 2013 • Special rate available until: Tue, Oct 22

**Book Standard King or Double at Norfolk Waterside Marriott for \$109.00 per night**

Use this link to make online reservations with the VAST Group Rate:

[http://www.marriott.com/hotels/travel/orfws-norfolk-waterside-marriott/?toDate=11/17/13&groupCode=SCTSC&stop\\_mobi=yes&fromDate=11/12/13&app=resvlink](http://www.marriott.com/hotels/travel/orfws-norfolk-waterside-marriott/?toDate=11/17/13&groupCode=SCTSC&stop_mobi=yes&fromDate=11/12/13&app=resvlink)

The 61st Professional Development Institute (PDI) of the Virginia Association of Science Teachers will be held at the Norfolk Waterside Marriott in Norfolk, Virginia on November 14 - 16. Register early for a room at the convention hall. You will enjoy maximum time at the conference, receive the VAST discount and you help support VAST by filling our contracted rooms.

**Parking: Overnight** Guest park in Main Street Garage - \$10 per day rate (You must have ticket stamped upon Check-in) and **Day parking** is \$12 per day.

**Main Street Parking Garage** is accessible on the 3rd floor bridge; this is the garage where guests that are staying at the hotel (over night guests) will receive special discounted parking.

**Waterside Parking Garage** is accessible on the 2nd floor entrance; anyone can park in this garage, but overnight guests will not receive special discounted parking there.

## BECOME AN EXCEPTIONAL SPECIAL EDUCATOR

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Catherine Webb, Alumna  
2010 Virginia Teacher of the Year



# FRIDAY at the VAST Professional Institute

A *Celebration of Science* will begin at 4:00 pm. Delta Education is sponsoring a celebration in the exhibit hall with heavy appetizers, science competitions and resources to discover. A ticketed dinner will be served at 6:00 pm followed by the annual awards presentations. Later, Eric Rhoades, Director of the Office for Science and Health Education for the Virginia Department of Education will present *Setting a New Trendline for Science Education*.

## VAST Celebration of Science

### VAST Regions' Design Competition 2013

#### ***Sustainable Spaghetti Towers!***

Join colleagues from your region and bring together your knowledge of science, innovation, and teamwork for a **FUN-tastic** time designing and building a Sustainable Spaghetti Tower! Each region's team will be provided with materials to artfully create a tower that will sustain an "earthquake" and please the eye of the judges.

The winning region will receive a prize and each member of the team a special gift. See your VAST Regional Director during the PDI to join your team.



Photo from 2012 PDI Design Contest

The VAST Regions' Design Competition is sponsored by members of School Specialty Science.

## Nauticus and the Battleship Wisconsin



### Nauticus and Battleship Wisconsin

At 7:30 pm, we will take a short stroll to **Nauticus**. Doors will open just for VAST PDI attendees from 8:00 - 10:00 pm! Here is a sampling of what you will experience:

- Walk aboard the largest and last battleship built by the US Navy - **Battleship Wisconsin**
- Explore exhibits and aquariums including touch tanks and shark tank
- Participate in a sampling of our education programs
- Watch a 3D movie in our large screen theater
- Visit the Banana Pier gift shop



Nauticus Educator at Horseshoe Crab Cove shows a horseshoe crab to students.

### Door Prizes

Nauticus will be raffling off two door prizes! You have the chance to win a complimentary field trip to Nauticus or an outreach program for your class! Teachers must be present to win.

### Discounts during VAST PDI

Throughout the conference, Nauticus will offer their usual complimentary general admission to teachers. If you brought a guest to the conference, they will receive a discounted rate of \$12 (adult), \$10 (child) for general admission. Just show your PDI badge or Teacher ID at the admissions desk inside Nauticus

Have you ever built an ROV?  
How powerful are those 16 inch guns on the Wisconsin?  
Do they really need a weather forecast on board the Battleship?



Join us at **Nauticus** and the **Battleship Wisconsin** to experience all that we have to offer you and your students. Explore the exhibits on your own or attend one or more of our exciting programs.





## Where big ideas become the next big thing.

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Email us at [campatmyschool@invent.org](mailto:campatmyschool@invent.org)



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**WIN! WIN! WIN!**

## PDI Alerts

### Increase Your Knowledge

### Increase Your Chances of Winning!

When you come to General Sessions 1-4 you will receive a ticket each time. You know the kind, it tears in half and you keep one part and we keep the other half with matching numbers. Prizes will be awarded at each General Session. At the last General Session you will use the door prize ticket found in your registration packet to enter for LOTS of prizes.

If you attend all of the General Sessions you will have five chances to win the prizes. Attend more General Sessions and increase your knowledge and chances for winning.

***It's a win-win-win-win-win-hope-to-win situation!!*** You must be present to win!

### Attention First Time Attendees to a VAST PDI!

**WIN! WIN! WIN!**

If you are a first time attendee to the VAST PDI, within your first 5 years of teaching, and you checked the box indicating this at registration, you will receive a "first timer ticket" in your attendee packet. The ticket is good for an entry into the drawing for the **First Timer Scholarship** for a registration to attend next year's VAST PDI in Roanoke, VA.

The scholarship is funded by Bill Stevens of Eduware and support continues from VAST membership.

The drawing will take place at the final session. You must be present to win.

# Field Trips: VAST PDI

Is there a better way to experience the Virginia shore?



## Virginia Aquarium

Maximum number of participants: 30

Join us for a half-day of fun at the Virginia Aquarium and Marine Science Center! You will start your visit with a look at the educational programs offered through the Aquarium. Next you will be wowed as you tour two buildings full of live animal and interactive exhibits. You'll come face to face with sharks, sea turtles, spotted eagle rays, river otters, harbor seals, and much, much more. You'll end your visit with a special look behind the scenes. An educator will walk you above several large aquariums and talk about how we care for all of our animals.

\$30.00

## Norfolk Botanical Garden

Maximum number of participants: 30

Spend an afternoon exploring the Norfolk Botanical Garden. This 155 acre garden is one of the best kept secrets of Hampton Roads with over 20 different themed gardens and many natural areas to highlight the native plants of Virginia. School programs are offered throughout the year and focus on the Virginia Standards of Learning for ages Pre-k - 5th grade, and a special boat tour for students in grade 6 and above. Dress for the weather!

\$30.00

## Naval Station Norfolk Ship Tours

Maximum number of participants: 20

Tour will be of several ships moored at the piers at the world's largest naval base, Naval Station Norfolk. Although specific platforms have not yet been identified, if possible the tour will include a nuclear-powered aircraft carrier (underway home to about 5,000 Sailors – truly a “city at sea”), a guided missile cruiser or destroyer, and an attack submarine. Wear comfortable clothing, appropriate for the weather, and comfortable and practical walking shoes. It can be challenging getting around on Navy ships, as the “ladders” can be steep (or in some cases vertical), so dress accordingly. Photography is encouraged, so bring your camera! Your escort will inform you if there is anything we don't want you to photograph. We will require names of participants in advance of your visit.

\$30.00

## Chesapeake Bay Foundation

The Chesapeake Bay Foundation's (CBF) Hampton Roads Education Program leads participants to exciting new perspectives on Hampton Roads tributaries and their connections to the Bay. CBF's environmental education programs bring life to Chesapeake Bay watershed curricula and field investigations focus on methods incorporating environmental education into the core subject areas of science, reading, math, and social studies. This trip investigates the ecology, natural history, and modern challenges of the region. While aboard the 50' USCG inspected vessel Bea Hayman Clark on the James River, participants examine the relationship between human activities, land use, and water quality. Hands-on activities like trawling and water quality collection and analysis encourage sensitivity and knowledge of local ecosystems, giving relevance and greater understanding to classroom curricula. Our program staff provides opportunities for careful observations and synthesis of information gathered during the field study experience. Participants are encouraged to explore the complexity of the watershed, and to see themselves as part of the solution. Participants will also learn of the many educational offerings CBF staff can provide throughout Virginia.

Maximum number of participants: 25

Participants should wear clothes appropriate for the weather, knowing that it is often 10 degrees colder on the water; wear clothes that can get wet and muddy, bring a water bottle, and enthusiasm!

\$30.00

# Pre-PDI Workshops

On Thursday, November 14, at the Norfolk Marriott Waterside four different three hour workshops are being offered, one in the morning and three in the afternoon.

**Registration is required at [www.vast.org](http://www.vast.org) when you register for the PDI.**

## ❖ ***Growing Scientists! Differentiating Science for All Learners*** presented by: **Jenny Sue Flannagan**

Heard of differentiation but not really sure how to start? Making differentiation practical and manageable is the theme of this preconference session. During this session, teachers will learn what is and what is not. We will look at various processes of differentiation and tools that can help support students in learning science. Teachers will leave with strategies and hands-on materials they can use in their classrooms the very next day.

9:00 am -12:00 noon - Thursday, November 14

Grade Levels: - Elementary

## ❖ ***STEM Approach to Teaching Electricity and Magnetism***



Explore how electricity and magnetism are related through hands-on experiences. Apply your knowledge to engineering a wind turbine. Build, test, and revise your model so that it generates as much power as possible. Take away STEM activities and an understanding of how to apply the Engineering Cycle in science classes.

1:00 - 4:00 pm - Thursday, November 14

Grade Levels: Middle and High School

## ❖ ***FOSStering the English and Science Standards of Learning, K-8*** ***Where active science and literacy intersect***



### **FOSS Institute 2013**

Science is an ideal content area for students to develop literacy skills described in the English Standards of Learning. Studies of student achievement on standardized tests show increased achievement across all areas of the curriculum when schools use FOSS™: Full Option Science System to employ a content-focused approach to integrated curriculum. This engaging, interactive workshop outlines a framework for integration beginning with hands-on investigation, models powerful literacy strategies, and explores ways schools can use FOSS to implement the English Standards of Learning through the Science curriculum.

With an integrated instructional design using FOSS, students

- Acquire and use academic and domain specific vocabulary to express their thinking
- Write a variety of text, including informative, narrative, and evidence-based arguments
- Read and comprehend informational text, integrating knowledge and ideas
- Conduct research, using a variety of resources, and present their knowledge clearly

One Participant will win a FOSS kit!

Participants will walk away with resources, materials, and ideas to begin implementing the English Standards of Learning into the Science curriculum. Limited to 30 participants, so register early at [www.vast.org](http://www.vast.org).

1:00 – 4:00 p.m., Thursday, November 14, 2013

Grade Levels K-8

## ❖ ***Using Design Briefs to Develop STEM Practices, Grades 4 - 8*** **FOSS Institute 2013**



STEM investigations should be applications designed and conducted by students in a performance based arena. The focus of this workshop has been crafted to highlight the Design Brief, a first step approach in creating STEM based challenges that dovetail with FOSS Investigations and other problem-based investigations. Design briefs are a blend of science concepts and the instructional strategies used in Engineering and Technology Education. This strategy employs a prescribed format but allows participants great flexibility to differentiate as they craft their own data based solution to a stated problem much in keeping with the philosophy of standards-based science education.

This session has been created for teachers who want to create independent opportunities for their students to apply the content, concepts, and process skills created and nurtured by engineering design processes, inquiry-based science investigations, and FOSS investigations.

During this workshop, participants will experience the complete design brief process as they engage in collaborative group tasks with specific materials and well-defined challenges. Sample CDs and materials will be available for all participants! Limited to 30 participants, so register early at [www.vast.org](http://www.vast.org).

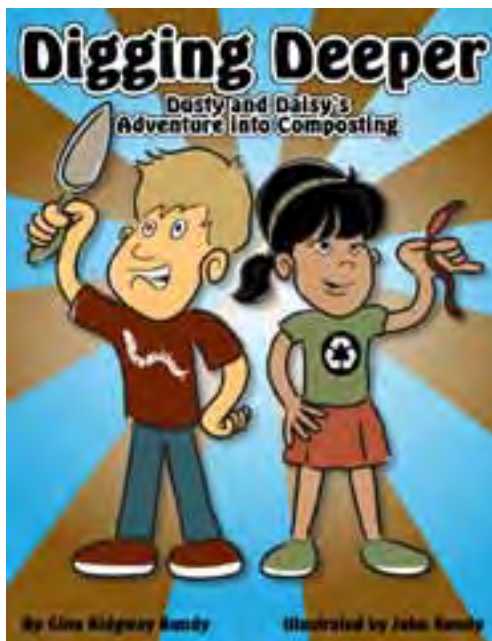
1:00 – 4:00 p.m., Thursday, November 14, 2013

Grade Levels 4 - 8

One Participant will win a FOSS kit!

The 2013 FOSS Institutes are sponsored by Delta Education  
A proud partner of the Virginia Association of Science Teachers and the 2013 VAST PDI





***Digging Deeper: Dusty and Daisy's Adventure into Composting***

With experiments and activities Dusty and Daisy learn about soil, ecosystems, biomes, food webs, and sustainable living.



***The Magnificent Magnifying Lens***

K-4 children are taught by a child how to use a magnifying lens. Science terms are explained by the child.



***The Marlin and the Mermaid "Help Save the Bay"***

A rhyming children's book designed to educate K-4 students about sustainability and how they can help keep the Bay clean.

# Book Signing in the PDI Exhibit Hall

Friday, November 15, 2013

**Book Signings at the VAST Booth**

- 1:00 - 2:00 - Jenny Sue Flannigan and Heather Newton, *The Magnificent Magnifying Lens*
- 4:00 - 4:30 - Daniel Ford, *The Marlin and the Mermaid Investigate the Great Pacific Garbage Patch*
- 5:00 - 5:30 - Gina Bundy, *Digging Deeper, Dusty and Daisy's Adventure into Composting*

Saturday, November 16, 2013

- 11:30 - 12:30 Kaleela Thompson, *Where Oh Where is my Swallowtail?*

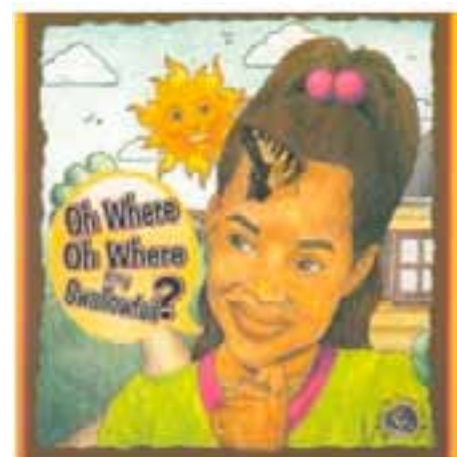
**Author Workshops at VA Creative Corner**

Friday, November 15, 2013

- 3:30 - 4:30 - Gina Bundy, *A NEW Way to Look at Soil and Fertilizers - the Soil Food Web.*  
Activity - *Sock Monsters*
- 4:30 - 5:30 - Daniel Ford, *Sustaining Science with Mermaid Hales*  
Activity - *Photo Opportunity with Mermaid Hales*

Saturday, November 16, 2013

- 9:00 - 10:00 - Gina Bundy, *Using Pictures to Engage Sustainable Thinking*  
Activity - *Creative Coloring of Crops*
- 1:00 - 2:00 - Kaleela Thompson, *My Home, My History, and Our World*  
Activity - *Integrating Music and Books With Learning about Butterflies*



***Oh Where, Oh Where is My Swallowtail?***

Written by 12 year old Kaleela Thompson and illustrated by Trevor Lucas. Kaleela's Eastern Tiger Swallowtail butterfly, is missing. New readers will find both the read along cd and the focus on basic words supportive as they help Kaleela find her butterfly.



## **Donald Richard Cottingham, Sr.**

### **July 12, 1924 - September 4, 2013**

Donald R. Cottingham Sr., 89, passed away on September 4, 2013 after a short illness. Born in Cicero, Illinois on July 12, 1924, he received his BS and MS degrees from Old Dominion University in 1966 and 1971 respectively. He served his nation proudly as a US Navy officer in WWII, Korea, and into the early Vietnam War years. Don Cottingham then changed careers and became an accomplished teacher of Chemistry and General Sciences. Don taught at Norview Junior High, Norfolk Academy, and Maury High, where he was Chair of the Science Department. Don's high honors as a teacher are many, including Norfolk Teacher of the Year 1981, Outstanding Teacher of the National Academy of Sciences, and a personal recognition award from President Reagan for Outstanding Science Teacher leadership in 1985. A former VJAS Director and long-time member of the VAST Board, Don served as VAST President from 1990- 91. Mr. Cottingham was presented with the President's Distinguished Service award by VAST in 1998.



Throughout his career, Don Cottingham consistently encouraged and promoted the development of future science teachers and he supported the Preservice Teacher Session at VAST PDIs by providing PDI scholarships and refreshments. He felt very strongly that supporting prospective educators was an important obligation of professionals in the field. Please consider picking up Don's baton by making a contribution to the Preservice Teachers Fund so that Don's support may be continued and even increased. Pay it forward and invest in future science teachers.

To make a tax-deductible contribution please send your donation directly to the treasurer, Jimmy Johnson at :  
Mr. Jimmy Johnson, • 12141 Winns Church Rd, • Glen Allen, VA, 23059  
and make your check payable to VAST. Please let Jimmy know that your check is a contribution for the  
"Preservice Teacher Fund". Thank you!!!



## ***Encourage New Science Teachers by Supporting the Eduware "First Timers" Awards!***

Your contribution to the Eduware "First Timers" Awards Endowment for excellence in science education will make a difference. VAST hopes to honor and support those whose accomplishments enhance science education. A donation from Bill Stevens of Eduware, Inc., has made it possible for VAST to award to new teachers the cost of the registration to a VAST PDI. By contributing to these efforts, you are supporting the attendance of new, vibrant members to our professional development institute, (PDI). This fund supports those PDI registrations from teachers who have three years of experience or less.

In order to increase the endowment's principle, we need your support for this program. VAST members and non-members may make a voluntary pledge to the endowment. Together we can all make a difference by helping to support the expenses of the new educators so that they may continue in the field.

Please make a pledge today. This is just one way to support new science educators and quality science education for years to come. VAST is a 501c3 organization and is eligible to receive tax exempt donations.

To make a tax-deductible contribution please send your donation directly to the treasurer, Jimmy Johnson at :  
Mr. Jimmy Johnson, • 12141 Winns Church Rd, • Glen Allen, VA, 23059  
and make your check payable to VAST. Please let Jimmy know that your check is a contribution for the  
"First Timers Award Endowment". Thank you!!!

# Partners in Science



The 2013 VAST PDI is brought to you by the hard work of many people and the generous contributions of individuals and organizations. Our sponsors contribute to the success of VAST by their presence, financial support, and resources.

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The VAST Board of Directors would like to recognize the organizations listed below for their generous donations and contributions.



***Don Cottingham  
Retired VAST  
President***



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Please take a few moments to offer a special  
“Thank You!”  
to the representatives of each of these organizations!

In addition to these organizations, please extend a special thanks to the people who make up the VAST Board of Directors. This group of individuals makes VAST a reality and gives many hours to develop and makes the VAST PDI happen each year.



## Teachers Make the Most of \$1000 VISTA Supply Money

How can \$1000 in free science supplies help an elementary teacher? We checked in with participants from last summer's VISTA Elementary Science Institute to find out. Many spent the funds to support the problem-based learning (PBL) units they will be

implementing in their classrooms this school year, following up on their VISTA work. Some bought general science supplies, and some even pooled their money to buy bigger items like telescopes or microscopes! Read on for an inside look:

- **Becky Roy, 4th grade, Tuckahoe Elementary School, Henrico County Public Schools, 4th grade:** I spent my VISTA \$1,000 on items like a microscope, general science lab equipment, and a full weather kit. My problem-based learning unit studies SOL 4.6 (weather), and our scenario is: "Matt DiNardo at Channel 8 has asked Tuckahoe ES to become a weather recording site. He needs our help creating weather instruments, writing down data in our weather journals, and analyzing data for his weather portion of the news."
- **Kara Collins, 5th grade, Ettrick Elementary School, Chesterfield County:** My PBL is focused on Geology. I spent about half of my money on rocks, fossils, minerals, and other geology-related items to support my unit. I also purchased two high-powered microscopes to use during the unit and in other areas of study in our science classroom.
- **Tara Little, 5th grade, Fannie W. Fitzgerald ES, Woodbridge, VA:** The PBL unit I will be teaching will cover the 5th grade Oceanography unit. I used part of the \$1,000 on materials for the PBL, including materials for measuring the depth of the ocean floor, salinity of water, density kit and a map of the sea floor kit. The other half of the money was spent on basic science tools to support other units in science, including sound, matter, light, geology, and diversity of light.
- **Stephanie Warren, 5th grade, Margaret Brent Elementary School, Stafford, VA:** My PBL will focus on earth science and oceans; the students will determine what are likely geological disasters that may hit the Virginia area and how we can best prepare for them. With my \$1,000 I bought an earthquake table (the students can build earthquake-proof structures and then test their designs under similar conditions), as well as a seismograph. I bought many rock samples to allow the students to see up-close specific rock characteristics. For the oceans component, I bought a warm/cool water current model to allow the students to see how water travels, as well as an underwater sea floor model. For myself, I bought several NSTA books on earth science and oceans filled with great hands-on, inquiry-rich activities to assist in teaching the units.
- **Rick Bain, 4th grade, Fairfield Elementary, Virginia Beach:** My students will be studying the failing health of bees and impacts on plants and humans. While my PBL is focusing on plants, I chose not to use all my money for that subject. I



wanted to enhance my teaching abilities by having true-to-life scientific equipment that my students could use with hands-on activities. I purchased beakers, test tubes, soil and water meters, and chromatography supplies for my PBL. I also purchased electricity equipment (a St. Louis motor, alligator clips, and student usable voltage meters). For my weather unit, I purchased a barometer and a few digital thermometers. Lastly I bought a dissecting microscope so we can look closely at the make up of some plant structures and animals from our own schoolyard. Our school had three members to our VISTA team; we coordinated the money and talked about what would benefit the most students. The whole team is going to use the dissecting microscope I purchased. My colleague purchased a telescope, which we will be using at a space discovery night for the school.

For more information on the VISTA elementary program, visit <http://vista.gmu.edu/elementary>. Applications for next year will open in November.

### VISTA Videos Premiere!

You can now get a first-hand look at the ways teachers are innovating science instruction across the state through the **VISTA Voices: Inside the Elementary Program** video series! This summer, VISTA video crews followed teachers participating in our elementary science institutes. We are releasing short videos online this fall to tell the stories of three groups of teachers—all participants in the four-week VISTA institutes. Watch them all on [Twitter](#), [Facebook](#) and [YouTube](#).



### Visit VISTA at VAST

The VAST Annual Professional Development Institute is coming up fast! Please visit the **VISTA booth** in the exhibit hall to learn more about this statewide project that's changing the way science is taught across Virginia. VISTA staff will also be presenting during **Session C** about "Elementary Science the VISTA Way . . . and PAID Professional Development!"

VISTA Secondary Teachers to Share Success at VAST Participants in VISTA's Secondary Teacher Program will be sharing their success with implementing inquiry and problem-based learning in their science classrooms at VAST. Three separate sessions will be held by teachers from our Mason, W&M, and VCU sites during **Sessions D, E and I**.



## How Am I Going to Fit All of This In? Integrating Across the Curriculum with VISTA

By Jamie Fatek

4th Grade Teacher, Cedar Road Elementary School, Chesapeake, VA

After I participated in VISTA's Elementary Science Institute in summer of 2012, I returned to my classroom with a renewed excitement, especially for teaching science. I had so many new ideas, lessons, strategies, and materials to try. My students were excited about learning, knowing I had just completed such an awesome opportunity. Then I went to the VAST PDI and got even MORE awesome ideas. The problem: *How to fit it all in!*

As elementary teachers, we understand the (unrealistic) time parameters we are given to teach our students to mastery in every subject and oh yeah, also have time for lunch, PE, recess, music, assemblies, fire drills, etc. My students wanted to do science every minute and would literally cheer when I said it was time for science each day. I quickly discovered the best approach for me was to teach everything I could through the lens of science. The only answer to my time crunch was integrating as many subjects as possible.

Curriculum Integration is an obvious choice to help teachers cover all the content that is required of us by the Virginia Standards of Learning. However, like me, you may find integration impractical given the pacing guides that your school district sets out for you and the benchmark tests your students are expected to pass. When I decided to integrate my entire curriculum, I was faced with the challenge of merging language arts with a social studies unit on Jamestown, a science unit on Force, Motion, and Energy, and Adding and Subtracting Fractions in math.

Combining language arts and social studies is easy, as veteran teachers know, by reading a historical fiction novel. I could cover the language arts skills and strategies that I needed to while reading a historically accurate account of our Social Studies content. I chose ***Blood on the River***, by Elisa Carbone, an exciting story about a young boy's experience in the Jamestown colony. But how on earth could I bring the science principles of Force, Motion, and Energy into this unit? I thought about the big ideas involved in the settlement Virginia: transportation, conflict with natives, new government, and trade. I eventually got to the ideas that ships moved and so did the weapons that the English and Powhatans used, and decided to focus the lessons of the unit to these ideas.

In the novel when we read about the voyage to Virginia onboard the Susan Constant, we talked about what it might be like to be Samuel Collier, John Smith's page. The students completed a STEM activity in which they designed and built trunks, not to exceed a specific volume. Although volume is not a 4th grade SOL, multiplication is, so calculating volume proved to be an awesome review of multiplication facts. After the miniature trunks were constructed, the kids filled them with items that they thought might be useful once the colonists reached the new colony and then justified why they needed each item in writing. Finally, we looked at how the ships actually moved, and explored the idea of force, including pushes and pulls, with the wind against the sails, anchors on the sea-bottom, oars, and more. My students experimented with how the weight of the cargo on the ship would affect its movement and built foil boats, which they loaded with gram stackers, measured, redesigned, analyzed, and



experimented some more. Once we had explored the scientific ideas surrounding the colonists' transatlantic voyage, we went back to where we had left off reading our novel.

The colonists' first interactions with the natives brought about more scientific study, as we pondered the question, "Which was the better weapon, the bow and arrow or the musket?" We researched how a musket worked,

how the gunpowder exploding provides a push which then forces the musket ball out. We also talked about friction, and why the colonists would lubricate the musket balls with their spit (causing lead poisoning in many of them). As we continued to read the novel, there were many places where the science curriculum naturally fit into what we were learning about in social studies. I was able to use the lessons and experiments that I normally incorporate in this science unit and then apply them back to what we had read about in ***Blood on the River***.

There were also many places where math fit naturally such as measurement and place value, but it was harder to integrate the specific topic of adding and subtracting fractions. It was through archaeology that I was able to apply fractions. My students understood that often archaeologists only find fractions of artifacts. They were able to imagine that different archaeologists had each found a different fraction of the same artifact and then add them together. The students had a realistic application of this math concept and it was fun for them as well. This being a hard skill for fourth graders to master, we used the math textbook for additional practice, but at least I was able to introduce the idea through the Social Studies lens.

I found that in teaching an integrated curriculum, where the subjects flowed into each other logically, instead of stopping after 30 minutes of science because that is what I had allotted, my students gained a richer understanding across every subject area. One student commented that she "liked it because it was not like we would stop and switch to math or science or social studies. We could just keep on learning." Another student stated that learning this way made him look forward to going to school. The skills and love for learning that my students gained through this unit was immeasurable. That is the whole point, isn't it?

Planning for this unit wasn't easy. It took a lot of creative thinking about how to make these ideas mesh. I also spent a lot of time creating and searching for the right activities to facilitate optimum learning experiences for my students. That being said, while teaching this unit I looked forward to going to work every day and had fun watching my students make cross-curricular connections. I'm eager to try a new integrated unit this coming year and I encourage you to as well!

### Sources:

*Blood on the River*, Carbone, Elissa. 2006

*Children's Engineering: A Teacher Resource Guide for Design and Technology in Grades K-5*, Virginia Children's Engineering Council.  
<http://childrensengineering.org>

"Float My Boat". [http://pbskids.org/fetch/games/activities/pdf/FETCH\\_FloatMyBoat.pdf](http://pbskids.org/fetch/games/activities/pdf/FETCH_FloatMyBoat.pdf)





**Question your world.**

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# 2013 VAST Professional Development Institute

## Sustaining Science

### VAST Board 2013

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

**Lab-Aids, Inc.**  
17 Colt Court  
Ronkonkoma, NY 11779  
[www.lab-aids.com](http://www.lab-aids.com)

**Virginia Space Grant Consortium**  
600 Butler Farm Rd. S-200  
Hampton, VA 23666  
[www.vsgc.odu.edu](http://www.vsgc.odu.edu)



For up to date PDI information, please check  
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VAST Advertising Form 2013

VAST Nominating Form 2013

VAST Corporate Membership Form 2013

### MINI-GRANT FORMS 2013:

**VAST Mini-Grant Form • AIPG Geology Mini-Grant Form • TACT Chemistry Mini-Grant Form**

<http://www.vast.org>



## Our Mission:

**VAST** is a comprehensive educational organization dedicated to the nurturing and advancement of superior science education.

VAST is a nonprofit organization by educators for educators.

- Affiliated with the Virginia Math Science Coalition
- A State Chapter of the National Science Teacher's Association

Send articles, letters to the editor, or labs by the  
copy deadline, **December 1, 2013**, for inclusion  
in the next digital VAST Newsletter.

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

**Please update any changes in your P.O. or e-mail addresses by sending in a new membership form as an update. P.O. will not forward the newsletter.**

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