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The Science Educator

Spring 2013

A publication of VAST, The Virginia Association of Science Teachers

Vol. 61, No.5

The 61st VAST PDI is Coming in November 2013!



Nauticus and the Battle Ship Wisconsin

Please join us for our annual PDI November 14-16, 2013 at the beautiful Marriott Waterside Hotel in Norfolk, Virginia. It is an event that promises to be an intense, exciting, and meaningful few days of professional development. We are working on a wonderful and engaging program that is sure to capture your intellect and attention, but we can't have a PDI without you attending and presenting! We all learn from each other. Consider sharing your

successes, breakthroughs, incredible content knowledge, and amazing pedagogy with your colleagues. We have identified some strands under which you may choose to focus your attention, but don't feel limited by them. As the PDI theme suggests, think about ways in which you have helped students develop a love of learning and science.

Important information about the PDI:

- ✿ Presenter proposals are due by June 17. Submit yours today. The online form is available at www.vast.org.
- ✿ The hotel reservation form is now available on the website. Reserve your room before they are all taken.
- ✿ The PDI registration form will be available on the VAST website sometime in June. Register early so you will be able to participate in your choice of field trips and workshops before they fill up.

Email PDI chairman John Kowalski (jkowalski@rvgs.k12.va.us) or VAST executive director Susan Booth (susan.science@gmail.com) with your questions, suggestions, and concerns about the 2013 PDI.

The PDI committee is hard at work lining up first-rate general session speakers and finalizing field trips. Check the website frequently for updates and new information about the program.

To date the following speakers and activities have been confirmed for the 2013 PDI.



*Norfolk Waterside
Marriott*

Continued next page

PDI Scheduled Events planned so far.

Check for updates on the VAST website.

Pre-Conference Institutes on Thursday

- FOSStering the English and Science Standards of Learning for K-8
- Using Design Briefs to Develop Engineering Practices with FOSS, grades 4-8 (see page 8)

Friday Morning General Session

Dr. Paul F. 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 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.

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.

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>.

Friday Evening

Join your fellow science teachers at the Roanoke Marriott 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.

Saturday Afternoon

During our last general session Chris Ludwig and Richard Cheatham will present: ***The Modern Flora of Virginia:***

Worth the 250 Year Wait



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. John Clayton (portrayed by Richard Cheatham, well-known historical reenactor) will also appear as if from the mid-1700's to contrast the experiences of his times and his role in development of the ***Flora Virginica***.

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.



**The Executive Director's Supports the VAST Editor, Jean Foss —
Based on Reflections Made by the VJAS VOICE Editor, Alan Booth**



Editor's Reflection – Undertaken New Challenges

"Over the course of the year, I have gradually taken on the responsibility of the **VOICE** - a quarterly publication of the Virginia Junior Academy of Science. I had no previous experience with newsletters, and so I could not possibly have conceived what I was agreeing to participate in. Yet upon learning the expectations and responsibilities associated, I did not resign. Rather I decided to make the most of the experience.

I quickly discovered that composing and editing a newsletter is nowhere near as easy as it may seem to a casual reader. The numerous articles, quickly devoured by even the most casual reader, take exorbitant amounts of time to write. Naturally, it becomes impossible to create an entire newsletter by yourself. In the case of the **VOICE**, I contacted many other youth and requested their assistance. One article from each student contacted was all I asked. This seemed a simple request to me; I would only have to copy and paste each student's work into the final publication and credit him or her appropriately. Yet working with other students only magnified the difficulty of composing the newsletter. Some students submitted late, while others were unaware they even had articles due.

I now understand the difficulties of working alone as well as the difficulties of working with others. It may sometimes seem easier to work alone, but the final creation will never be as complete, accurate or diverse as it would have been if I had included the contributions of others."

Alan Booth, Junior
Hampton High School

The quality of *The Science Educator* is affected in the same ways. It is a compilation of the efforts of many. Its goal is to be a voice for the organization and to include something of value for every science educator. It is strengthened by the contributions of many.

How about you? Are you able to find news and resources of interest to you and your students? There are others whose focus and interests match yours. Make the effort. Contribute.

On the last page of every issue is the submission deadline for the next issue. Please send your article to the editor, newsletter@vast.org.

Susan Booth

Check for PDI updates on the VAST website.

<http://www.vast.org/annual-pdi.html>

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“Stewards of the Future”



“As teachers, you are stewards of the future!” Jennifer Seydel said these powerful words during our Saturday morning General Session at last year’s PDI. Her talk, “Greening Schools from the Inside and Out,” was all about how teachers can inspire and lead the change that is needed in schools today.

She continued to say, “High quality and meaningful work by children and youth does not happen by accident. It happens with intention and purposeful planning by the adults who teach and facilitate in their classrooms and schools.”

Doing quality work in today’s schools takes a lot of energy. To be constantly looking for opportunities to open the eyes of our students (and sometimes administrators) takes practice, knowledge and patience. To work with intention and plan with a purpose is a never ending process. This is true in the classroom just like it is true at a VAST Board Meeting.

The VAST Board, which is made up of classroom teachers, supervisors, college professors and more, is committed to being stewards of the future as well.

We completely understand the challenges of today’s classrooms and want to help pave the way for Virginia Science teachers and Science leaders.

The most obvious way the VAST Board helps is by hosting our annual conference, or as we call it, our PDI ~ Professional Development Institute. But there are other ways we are committed to being good stewards of the future . . . We offer grants and awards that support and encourage quality science teaching; we publish a wonderful newsletter with countless classroom ideas and a peer reviewed journal for more scientific content. We also meet quarterly in Richmond to discuss science education related issues. Why not join us? Come and see the people you elected hard at work for you. Come and share your thoughts and ideas with us. You can stay for the day or join the board permanently . . . we have a few slots open. Come help us lead the way!

Being stewards of the future is serious business . . . and that is what VAST and Science teaching is all about!



***Your VAST
Board hard at
work
at a Board
Meeting in
Richmond!***

VAST PDI 2013 - Norfolk November 14 - 16



Visit Nauticus During the VAST PDI:



A Nauticus educator leads a tour of the Battle Ship Wisconsin.



Educator at horseshoe Crab Cove.

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.

Our education staff will be on hand to present demonstrations and programs and give you ideas for fun and engaging field trips. We will offer interior tours of the Battleship Wisconsin. (Limited number, guests will sign up on a first come first serve basis.)

Can't make it that night? Teachers always receive **free** general admission to Nauticus and the Battleship Wisconsin. Bring your school ID and stop by for an afternoon.

Check for PDI updates on the VAST website.

<http://www.vast.org/annual-pdi.html>

**There will be field trips, workshops and more than 100 concurrent sessions.
Plan to travel to the Virginia shore this November.**

Be A VAST PDI Presenter in 2013!

Will you be a Presenter this year? Share your knowledge, skills and experience with your colleagues and thus the students of science in the Commonwealth. It is worth the effort. You and your audience gain from the experience. Click below for an interactive Presenter Form.

<http://www.vast.org/annual-pdi.html>



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Delta Education listened to Virginia's elementary teachers and created a program that meets their needs. Delta Education's Science Program for Virginia includes everything needed to engage students in the amazing world of science.

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With our integrated approach, you can achieve more of your goals in reading, writing, and science.

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Let's Go on a Field Trip!

Is there a better way to experience the Virginia shore?
Share your experience with your students.



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

Maximum number of participants: 25

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.

Continued...

Chesapeake Bay Foundation

Continued:



Photo by Bill Portlock

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.

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

Create Your Professional Development in the following strands at the VAST PDI 2013:

Strand 1: Understanding Environmental Literacy Across the Disciplines

Understanding how our environment connects us to everything around us is critical. Share your passion about the environment through presentations of ideas and methods that inspire students to increase their own levels of environmental literacy.

Strand 2: Empowering Science Learning through STEM

Share your great ideas and activities about connecting Science, Technology, Engineering, and Mathematics into their established curricula. Using STEM-related processes, students will become innovative learners to enhance the sustainability of life on Earth.

Strand 3: What Works in Today's Science Classroom

Contribute to this strand's patchwork of hands-on and minds-on activities and instructional methods that work in both formal and informal teaching situations and support the science of sustainability at all levels of education.

Be A VAST PDI Presenter in 2013!

Will you be a Presenter this year? Share your knowledge, skills and experience with your colleagues and thus the students of science in the Commonwealth. It is worth the effort. You and your audience gain from the experience. Click below for an interactive Presenter Form.

<http://www.vast.org/annual-pdi.html>



Photos from 2012 PDI Design Contest

If we build it, they will come...

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.



VAST Celebration of Science

Friday, November 15

4:00 – 6:00 p.m.

VAST PDI Exhibit Hall

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



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Pre- VAST PDI Workshops

**Plan ahead to attend your Professional
Development Institute for three full days:
November 14, 15, and 16.**

Thursday workshops are planned for most grade levels as well as Thursday field trips to fabulous places in the Norfolk area. Visit the VAST website frequently to find updates and registration forms. <http://www.vast.org> Click on the "Annual PDI" tab.

PRE - PDI WORKSHOPS

Growing Scientists! Differentiating Science for All Learners

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 it 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.

Pre-PDI Workshop
November 14
Norfolk Marriott Waterside
Registration is required at www.vast.org



**Register early to insure your place in the workshops and /or field trips.
Spaces are limited.**



FOSS Institutes 2013

Thursday, November 14, 2013

1:00 – 4:00 p.m.

Norfolk Marriott Waterside

Registration required at www.vast.org



FOSStering the English and Science Standards of Learning, K-8

Where active science and literacy intersect

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 the curriculum areas 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 FOSS, students learn science concepts and apply literacy skills, such as

- *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*

Participants will walk away with resources, materials, and ideas to begin implementing the English Standards of Learning into the Science curriculum.

Using Design Briefs to Develop STEM Practices, Grades 4-8

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 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!



The 2013 FOSS Institutes are sponsored by Delta Education

A proud partner of the Virginia Association of Science Teachers and the 2013 VAST PDI

Perspectives on the Annual VAST Professional Development Institute

As a participant of the 2012 VAST conference in Williamsburg, I found the event to be very upbeat and energizing. Science teachers traveled from all regions of the Commonwealth to spend a few days reconnecting with colleagues and friends, discussing ideas for the classroom and sharing resources to better engage young students.

Attendees moved about the convention center at a fast pace, the general and concurrent sessions were crammed with teachers, the exchange between speaker and audience was lively, and the whole atmosphere seemed, to me, to be uplifting and full of heart. I knew that I was experiencing something very special.

I was invited to attend the conference as I manage the terrific group of people at Jefferson Lab in Newport News, who run the lab's science education program. Although not a teacher, I am a strong supporter of science education and have opportunities to interact with teachers and students who attend science programs at Jefferson Lab. I was delighted to participate in the conference and came away with a renewed appreciation for the critical role that teachers play in opening up a world of possibilities to young people.

Teachers know, better than anyone, that the potential of every young person is influenced by a number of variables. Perhaps one of the most important advantages that can influence a student is having access to a knowledgeable and enthusiastic teacher. Such teachers are in a unique position to engage the curiosity and encourage the aptitude of their students in positive and productive ways. Everyone wins when the potential in any one of us, student and teacher alike, is nurtured and more fully realized.

The annual VAST conference is a great opportunity for teachers to recharge. The workshops are informal and interactive. Ideas and resources are generously shared and there is ample time to cultivate the professional network that supports excellence in teaching.

I hope you take full advantage of the many worthwhile offerings at VAST 2013 in Norfolk.

Sally Fisk
Jefferson Lab

Shell Science Lab Challenge Announces 2013 Grand Prize Winner and National Finalists

The Shell Oil Company and the National Science Teachers Association announced the grand prize winner and four national finalists in the third annual Shell Science Lab Challenge. The competition encouraged teachers (grades 6-12) in the U.S. and Canada, who have found innovative ways to deliver quality lab experiences with limited school and laboratory resources, to share their approaches for a chance to win a school science lab makeover valued at \$20,000.

Dr. Frazier Wilson, Vice President, Shell Oil Company Foundation described the purpose of the challenge as, "The Shell Science Lab Challenge strives to support inquiry-based instructional practices of our science teachers and excite students about the wonders and possibilities of science through active learning that emphasizes questioning, data analysis, and critical thinking. Exemplary science teaching is more relevant when it occurs in a quality lab environment where science concepts can be explored by students."

"These science teachers have implemented some remarkable science programs, providing quality lab experiences for their students with few resources," said Dr. David Evans, Executive Director, NSTA. "We commend the winner and national finalists of the Shell Science Lab Challenge for their creativity, resourcefulness and commitment to their students."

Grand Prize Winner: **Merrie Rampy**, Highland High School, Craigmont, Idaho

National Finalist: **Joyce Corriere and Elizabeth Ciano**, Hampton High School, Hampton, Va.

National Finalist: **Sally Austin Hundley**, Bethel Middle School, Waynesville, N.C.

National Finalist: **Cathleen Tinder**, Sebastian Charter Junior High, Sebastian, Fla.

National Finalist: Rachel Willcutts, IDEA Frontier College Prep, Brownsville, Texas

The grand prize winner, will receive a science lab makeover support package for her school valued at \$20,000. The prize package includes an \$8,000 Shell cash grant, \$8,000 in donated lab equipment, \$1,000 in NSTA prizes—to include an NSTA bookstore gift certificate and NSTA conference registrations, NSTA memberships and NSTA Learning Center subscriptions for two teachers—and an expense-paid trip for two teachers to attend the 2013 NSTA National Conference on Science Education in San Antonio next month.

The four national finalists, will receive a science lab makeover support package for their school valued at \$8,500. The prize package includes a \$3,000 Shell cash grant, \$3,000 in donated lab equipment, \$1,000 in NSTA prizes—to include an NSTA bookstore gift certificate and NSTA conference registrations, NSTA memberships and NSTA Learning Center subscriptions for two teachers—and an expense-paid trip for one teacher to attend the 2013 NSTA National Conference on Science Education in San Antonio.

For more information about the Challenge, visit the competition web site. <http://www.nsta.org/shellsciencelab/>



VAST PDI
Norfolk, Virginia
November 14 - 16, 2013



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Meeting Rooms & Public

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**Online
registration for
the VAST PDI
2013 will be
available after
June 1 on the
VAST website at
www.vast.org.**

VAST PDI

Earliest Group Check-in: Tue Nov 13, 2013

Check-out: Sun Nov 17, 2013

Special rate available until: Tue Oct 22, 2013

Standard King or Double \$109.00 per night 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:

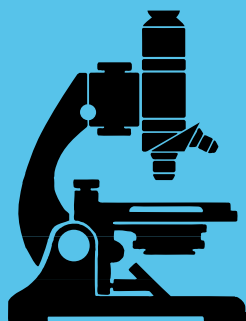
http://www.marriott.com/hotels/travel/orfws-norfolk-waterside-marriott/?toDate=11/17/13&groupCode=SCTSCTA&stop_mobi=yes&fromDate=11/13/13&app=resvlink

**Check the VAST
website often for
updates and more
information.**

**Please call hotel
directly if you
have any
difficulties.**

757 627 4200

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.



ASSOCIATED MICROSCOPE

**Associated Microscope Inc is on Virginia State Contract for
sales of the following brand of microscopes:**

Swift, National, Leica, Accu-Scope & Unitron

**Associated Microscope Inc. provides On Site Service and
Repair of microscopes,
balances & spectrophotometers**

VAST Art Contest

The Virginia Association of Science Teachers (VAST)
is calling all artists in grades Pre-K to 12!



*We need help making the cover for our Professional Development
Institute (PDI) Program and we'd like your help!*

Here are the specifics about this contest:

1. The illustration must express and include the following:
 - ✓ Our theme: **Sustaining Science!**
 - ✓ Our name: **Virginia Association of Science Teachers**
 - ✓ The date: **November 14 - 16, 2013**
 - ✓ The Location: Norfolk, Virginia
2. The illustration must fit on a regular 8 ½ x 11 inch piece of paper and have at least a 1 inch, white border.
3. All artwork must be original (no clip art, etc.)

A cash prize will be awarded to the winner!

Submission must be postmarked by Friday May 31, 2013.
All submissions become the property of VAST.

Mail submissions to:
Shirley Sypolt
VAST President-Elect/ PDI Committee
Cooper Elementary Magnet School
200 Marcella Road
Hampton, VA 23666

Don't forget to include your name, age, & phone number on the back of the artwork.

Aug 26, 2012



Exploring the Water World

This image from September 2012, shows that the Arctic sea is the smallest recorded since record keeping began in 1979. This image is from NASA's Scientific Visualization Studio at Goddard Space Flight Center.

In some ways, we know more about Mars, Venus and the Moon than we know about Earth. That's because 70% of our solar system's watery blue planet is hidden under its ocean. The ocean contains about 98% of all the water on Earth. In total volume, it makes up more than 99% of the space inhabited by living creatures on the planet.

As dominant a feature as it is, the ocean—at least below a few tens of meters deep—is an alien world most of us seldom contemplate. But perhaps we should.

The ocean stores heat like a “fly wheel” for climate. Its huge capacity as a heat and water reservoir moderates the climate of Earth. Within this Earth system, both the physical and biological processes of the ocean play a key role in the water cycle, the carbon cycle, and climate variability.

This great reservoir continuously exchanges heat, moisture, and carbon with the atmosphere, driving our weather patterns and influencing the slow, subtle changes in our climate.

The study of Earth and its ocean is a big part of NASA's mission. Before satellites, the information we had about the ocean was pretty much “hit or miss,” with the only data collectors being ships, buoys, and instruments set adrift on the waves.

Now ocean-observing satellites measure surface topography,

currents, waves, and winds. They monitor the health of phytoplankton, which live in the surface layer of the ocean and supply half the oxygen in the atmosphere. Satellites monitor the extent of Arctic sea ice so we can compare this important parameter with that of past years. Satellites also measure rainfall, the amount of sunlight reaching the sea, the temperature of the ocean's surface, and even its salinity!

Using remote sensing data and computer models, scientists can now investigate how the oceans affect the evolution of weather, hurricanes, and climate. In just a few months, one satellite can collect more information about the ocean than all the ships and buoys in the world have collected over the past 100 years!

NASA's Earth Science Division has launched many missions to planet Earth. These satellites and other studies all help us understand how the atmosphere, the ocean, the land and life—including humans—all interact together.

Find out more about NASA's ocean studies at <http://science.nasa.gov/earth-science/oceanography>. Kids will have fun exploring our planet at *The Space Place*, <http://spaceplace.nasa.gov/earth>.

This article was written by Diane K. Fisher and provided through the courtesy of the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

Perseverance and Perspective

Knowing others is intelligence;
knowing yourself is true wisdom.
Mastering others is strength;
mastering yourself is true power.

If you realize that you have enough
you are truly rich.
If you stay in the center
and embrace death with your whole heart,
you will endure forever.

— Lao Tzu
Tao Ching #33

...Stripped of causes and plans
And things to strive for,
I have discovered everything
I could need or ask for
is right here –
in flawed abundance.

We cannot eliminate hunger,
but we can feed each other...

— Mark Nepo
from "Accepting This"¹.

Each of us has developed over time our own personal list of those whom we admire for their accomplishments or words of courage and wisdom, contributors to the fabric of our lives as the pattern is created. Perhaps these persons who take on a larger-than-life persona are statesmen, scientists, poets, sports figures, artists or musicians, writers or philosophers. In some way they may serve to lead or inspire, comfort or console, but they all seem to awaken that "Yes!" which is too often buried inside of us. As teachers, energized or exhausted, may we not dream of awakening that same response within our own students?

Yet, as author and minister, Wayne Muller, has written¹: "Today, all the good people are exhausted. The teachers, parents, community leaders, social workers, doctors, clergy, nurses – those who keep our dreams alive, keep us drenched in hope, faith, and courage – they are overwhelmed, exhausted, and discouraged. We are all painfully aware of how little we have to offer, given the weight and magnitude of the sorrow, injustice, or pain we are to witness and heal."

In the face of tremendous and persistent pressures, the anxiety which teachers face is augmented these days by fears of



accountability and liability in a culture permeated by traumatic injuries to childhood and a prevailing attitude of blaming others for our own personal shortcomings. Especially at this time of year, teachers are acutely aware of the expectations, from politicians to parents, that we must correct or heal these societal dysfunctions. Using Lao Tzu's words, we have mistaken intelligence, strength, abundance and fear of death for wisdom, power, sufficiency, and the immortality of justice and compassion. As Herman Melville once wrote, "Law endures as long as the human mind, justice endures as long as the human soul."

And yet, do not physicians and teachers both operate in and celebrate the triumphs in our world of "flawed abundance" when, at the heart of things, we are "stripped of causes and plans and things to strive for" to use Mark Nepo's words? Here are some examples, from global to local, of the triumphs of personal perseverance in overcoming adversity:

Jacob Bronowski in his *Ascent of Man* describes the response of the pilot of a small plane which crashed the day before with cameraman aboard while filming the opening scenes in the program: "I'm going to be afraid when I go up tomorrow, but I'm going to do the filming. It's what I have to do." Bronowski concludes, "We are all afraid – for our confidence, for the future, for the world. That is the nature of the human imagination. Yet every man, every civilisation, has gone forward because of its engagement with what it has set itself to do. The personal commitment of a man to his skill, the intellectual commitment and the emotional commitment working together as one, has made the *Ascent of Man*."

Leaders like Mahatma Gandhi, Nelson Mandela, and Rosa Parks exemplify these very traits. One person can alter the misguided policies of a nation by showing extraordinary courage as well as commitment, be it Great Britain, South Africa, or the United States.

Robert Massie, born a hemophiliac, learned at his 1978 college graduation he was HIV-positive, an unwelcome consequence of his daily transfusions of blood from thousands of donors. Yet there was something in his immune system which made him

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resistant to AIDS so that, ironically, his blood has been sent globally to research laboratories for extensive study toward a cure for AIDS. About ten years ago, another transfusion had given him hepatitis C, resulting in cirrhosis and eventually requiring a liver transplant. Massie's extraordinary energy has, over the years, resulted in his entering the priesthood, traveling to South Africa and writing a book on apartheid, running for state political office, earning a doctorate in business administration, serving as executive director of Coalition for Environmentally Responsible Economies (CERES), and raising three healthy and energetic children.

Lorie Schneider awoke one morning with half of her body numb. She was a victim of multiple sclerosis. Ten years later she became the first person with MS to scale Mount Everest, one major step toward accomplishing her goal of climbing the highest peaks on each continent, the Seven Summits. In 2012 she led a group of climbers, including her 79-year-old father, for her second ascent of Mount Kilimanjaro. The unique thing about that group of 13 climbers was their commitment and perseverance in refusing the limitations of their diagnoses with either Parkinson's disease or MS. In fact, a man named Nathan, with two brain implants to regulate his Parkinson's tremors, led the first group to the summit.

In her second appearance at our high school, BethAnn Telford held a packed auditorium of more than 600 teens in rapt silence, speaking of her own personal history with brain cancer.

Looking a good ten years younger than her true age, BethAnn described her first symptom ("a 'pop' in my head during the 2004 Marine Corps marathon"), surgeries (only one physician would even try surgery on the tumor which had wrapped around her optic nerve), partial blindness, bladder transplant, and seizures. Her subject was perseverance ("Never, never quit."), living life on one's own terms, and promoting our school's Track-a-Thon" to raise money for the National Brain Tumor Society's drive for research funding. But, beginning with the statistic that brain tumors are the second leading cause of cancer-related deaths for people under 20, she gave encouragement and hope for those in the audience who suffer from depression, cancer, autism, or a variety of disorders making some students wheel-chair-bound. BethAnn has participated in several Boston Marathons (barely missing the traumatic explosions this Spring), and several Ironman triathlons, triumphing in the Kona Ironman in Hawaii in October 2012.



Courtesy BethAnn Telford

We talk a lot about the perseverance of adults over physical and emotional disorders. Yet we are especially touched when something like a brain tumor invades the life and the promise of a child. I recall my own experience with the feelings of injustice and helplessness when, a few weeks after graduation, my college roommate, Parke Richards, lost the battle to a brain tumor in his

first weeks at seminary – people are not supposed to die at 21, I remember thinking.

Spring with all her profligate petalled propaganda and carpets of spent cherry blossoms and maple samaras seems a bitterly ironic time for a neighborhood to honor a little girl struggling even to smile after surgery following her February diagnosis of brain cancer. And yet, in the spirit of hope and fulfillment of one of her dreams of being a princess, over 1000 of us gathered for a parade on May 3rd where Princess Tara and Prince Charming were paraded in a horse-drawn coach down the streets in our neighborhood, coachmen and others in costume. Two Fairfax Connector buses with broadside advertising, "Tired of being late? Make punctuality a reality!" were at a standstill as six different flashing rescue vehicles cleared a path for the coach which made three separate passes through the shouts and cheers and home-made banners. There were all ages, sizes, nationalities, and conditions in the crowd: motorized carts, canes, walkers all navigating roadside embankments and uneven ground, dogs barking and wagging. All of us realized we were a part of the compassionate support for Tara and her family in a way which reading or listening alone could not accomplish. In Mark Nepo's words, "I have discovered everything / I could need or ask for / is right here — / in flawed abundance."



Princess Tara, courtesy of I. Sankner.

How much time does it take to heal a heart?

How much money to rescue a life?

How much love to save a child?

How many to cheer you on?

Saving time or spending time —

How much time is enough?



Ertle Thompson Memorial Fund – Donors Invitation

Ertle Thompson, University of Virginia Professor of Science Education, passed away on June 5, 2012. For 28 years, Ertle served as a leader in the National Association of Academies of Science and AAAS. It brought him great joy to take AJAS Fellows under his wing at the annual meetings, introduce them to scientists, participate in their paper and poster presentations, guide them on tours, and encourage their interests. We invite all of Ertle's many friends and colleagues to help us memorialize his life and work by contributing to an endowment that will allow many students to attend the AJAS annual meetings in the years to come.

Donations can be addressed to Dr. Art Conway, Executive Officer, Virginia Academy of Science, 2500 West Broad Street, Richmond VA 23220. Please make checks payable to "Virginia Academy of Science" and note on the memo line: "Ertle Thompson Memorial Fund."

On March 23, 2013, the following resolution establishing Ertle's memorial was passed unanimously by the Council of the Virginia Academy of Science:

Whereas, Ertle Thompson was an enduring model of servant leadership in the Virginia Academy of Science and a science educator of international renown;

And whereas, Ertle Thompson was President of the Virginia Academy of Science and served tirelessly as chair of several Academy committees and projects;

And whereas, Ertle Thompson's leadership of the Virginia Academy of Science, the American Association for the Advancement of Science, the National Association of Academies of Science, and the American Junior Academy of Science has been recognized by frequent election to offices and appointment to committees of these associations, and election to Fellow of the Virginia Academy of Science;

And whereas, Ertle Thompson served for 28 years as the Academy's Delegate to AAAS and NAAS;

And whereas, during this tenure, Ertle Thompson was singularly dedicated to making the AAAS/NAAS/AJAS annual meetings an opportunity for academic, career, and personal growth for the Academy's annual student winners in the Virginia Junior Academy of Science -- our AJAS Fellows;

Therefore Be It Resolved, that the Council of the Virginia Academy of Science approves the establishment of an endowed memorial fund in his honor to be designated as the Ertle Thompson Memorial Fund;

And Be It Further Resolved, that the purpose of proceeds from the Ertle Thompson Memorial Fund shall be to support the participation in the annual meetings of the American Association for the Advancement of Science and the American Junior Academy of Science by those designated student winners of the Virginia Junior Academy of Science annual research competition and, when possible, their sponsoring chaperones;

And Be it Further Resolved, that the distribution of such proceeds shall be named Ertle Thompson AJAS Fellowships.

We welcome you to our celebration of Ertle's legacy. For further information, please contact Jim O'Brien, NAAS/AAAS Delegate at 757-423-4113 or jobrien@tcc.edu.

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References:

1. Intrator, Sam M. and Megan Scribner, Eds. *Leading from Within*. Jossey-Bass. 2007
2. National Brain Tumor Society. www.braintumor.org
3. Stillbrave Childhood Cancer Foundation, P.O. Box 3734, Arlington, VA 22203 info@stillbrave.org

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.

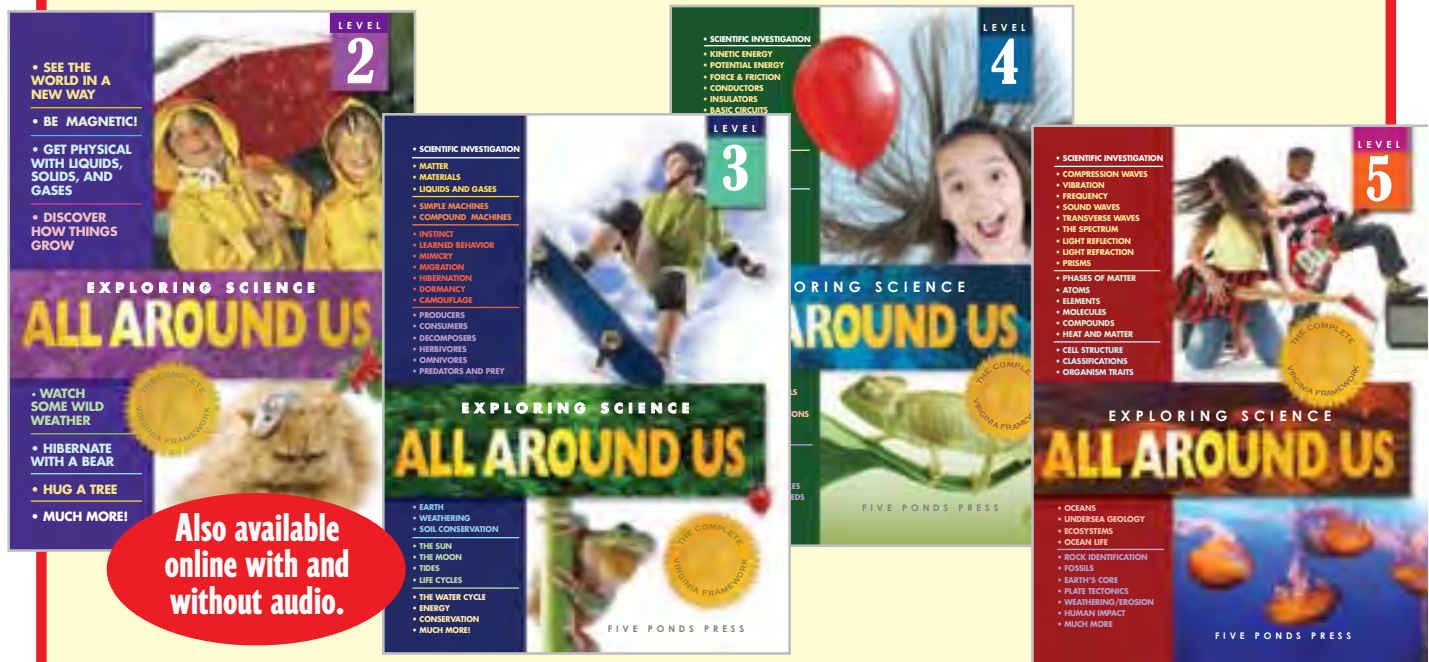
Dr. Ertle Thompson was an Honored VAST Member

Dr. Thompson had a long association with VAST. He served as corresponding secretary between 1954 and 1956. Through the 90s he was a VAST Board member and brought his wisdom to the organization serving as an advisor to the Board. In 1992 VAST recognized his dedication and distinguished career by awarding him the first VAST Presidential Distinguished Service award. He was a member of many professional associations. A long time member of AAAS and NSTA, he was involved in science education at the University of Virginia, the State of Virginia and science education at the national level.

“Please create a Science series that presents the Virginia Framework like the OUR WORLD series does for Social Studies.”

That was the request we heard from around the state as we hosted teacher training sessions for the many districts that adopted the **OUR WORLD** series of books for History and Social Science.

We listened! **EXPLORING SCIENCE ALL AROUND US** student books for Grades 3, 4, and 5 are shipping now. Grade 2 will be available this summer.



Five Ponds Science books have been extensively checked and thoroughly researched and reviewed by a team led by Jill Sible, Ph.D. and Giti Khodaparast, Ph.D., both of whom are esteemed faculty members at Virginia Tech in Blacksburg. With bright colorful photos and engaging text that exactly follow the new Virginia Framework—all supported with an extensive online teacher program—**EXPLORING SCIENCE ALL AROUND US** is the right choice for your students.

Please call Laura Buckius in Virginia Beach at **877 833 0603 x103** or email **Laura@FivePondsPress.com** for free samples and to preview online at **www.fivepondspressbooks.com**

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Are you using Adobe's free ap, Adobe Reader? It is available in pc or mac formats. Your phone or tablet will open The Science Educator that you have downloaded through mail, and provide you with built in tools to make reading the newsletter more enjoyable. You may choose to scroll left to right or from top to bottom. The same is true on your computer. Use Adobe Reader and investigate the built in actions that make reading easier.

Additional benefits are that the all links should be active. If you read about something interesting and you find a link, click on it to contact the author, find the advertiser on the Internet, or connect to an application form. Under the tab "View" click on "Read Mode" to add a small bar to the bottom of your page that provides one click connection to the next page or the previous page. From the tab "View" > "Page navigation" you may choose to go to the first page, next page, previous page, last page or even to a particular page number.



"Read Mode" Tool Bar

Within the newsletter you may always go back to the "Contents" list by clicking the link at the bottom right of each page. At the "Contents" each item listed is also a link. Click on the name of an article and you will go directly to that page.

Peregrine Falcons Thrive in Richmond



A peregrine falcon and nest captured by the wildlife cam on the Dominion building in downtown Richmond. This cam isn't manned all day like the eagle cam was, but it will provide insight into the life of Richmond's peregrine falcons.

See the Falcon cam on the web at:

<http://falconcam.tumblr.com/post/45833991417/new-nest-box-and-another-surprise>

The Richmond peregrine falcons are full of surprises this year, not only did the pair nest in a new location, but a visit by VDGIF biologists on Friday afternoon (March 15th) determined that the pair had two more eggs...for a total of five! This is very unusual for peregrine falcons. Work by Center for Conservation Biology (CCB) from 2002 through 2012 found only 7 five-egg clutches in Virginia during that 10 year period. *Center for Conservation Biology*

<http://www.ccbbirds.org/resources/publications/Biology>

STRENGTHEN YOUR FUTURE IN K-12 ADMINISTRATION

Sharon Byrdsong turned an under-performing school into one of the state's highest achieving traditional middle schools. This award-winning educator chose Regent University's nationally renowned, values-based School of Education to help prepare her. Sharon calls Regent her perfect match. Discover how Regent's School of Education—recognized for its top online programs by *U.S. News & World Report*, 2013*—can help you succeed.

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*Christian Leadership to
Change the World*

Sharon Byrdsong, Regent Graduate
National Middle School Principal of the Year, 2006

*Source: www.usnews.com/education/online-education.



Virginia SOL Resources from the DOE

Highlighted Superintendent's Memos

MEMO #109-13

Middle and Secondary Classroom Teachers' Planning Period

http://www.doe.virginia.gov/administrators/superintendents_memos/2013/109-13.shtml

MEMO #124-13

House Bill 2028 and Senate Bill 986; Emergency First Aid, Cardiopulmonary Resuscitation, and Use of Automated Defibrillators for Licensure and Renewal

http://www.doe.virginia.gov/administrators/superintendents_memos/2013/124-13.shtml

MEMO #105-13

Standard Diploma Credit Accommodations for Students with Disabilities

http://www.doe.virginia.gov/administrators/superintendents_memos/2013/105-13.shtml

MEMO #102-13

Advanced Placement and International Baccalaureate Test Fee Payment Program for 2012-2013

http://www.doe.virginia.gov/administrators/superintendents_memos/2013/102-13.shtml

MEMO #097-13

The 2013 Science through an Interdisciplinary Approach (SIA) Summer Institutes

http://www.doe.virginia.gov/administrators/superintendents_memos/2013/097-13.shtml

Resources for Teachers

Be sure to utilize resources from VDOE that include:

Updated Practice SOL Items and Guides for all levels plus the opportunity for students to gain TestNav experience prior to testing. http://www.doe.virginia.gov/testing/sol/practice_items/index.shtml

Narrated demonstration with examples of various technology-enhanced item types that appear on the spring 2013 Science SOL tests. <http://vaassessments.com/v/ScienceDemo/>

EOC Chemistry Periodic Table of Elements(PDF)

http://www.doe.virginia.gov/testing/test_administration/ancillary_materials/science/2010/2010_sol_periodic_table.pdf

Using Significant Digits in Chemistry (PDF) – This technical assistance document provides some basic rules for determining significant digits and using significant digits in calculations.

http://www.doe.virginia.gov/instruction/science/resources/tech_assistance_significant_digits.pdf

SOL Test Implementation Manuals (allowable test materials on page 20-21) and Examiner's Manuals
State Approved Calculators (PDF) for SOL testing.

http://www.doe.virginia.gov/testing/sol/standards_docs/mathematics/calculators/approved_calculators_sol_tests.pdf

VAST Forms

Are you looking for VAST forms? Please go to the VAST website and click on "Forms" to find what you are looking for. You will find forms for:

Membership Form for 2013-14

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>

My Water Quality Affects Yours—Really? A Collaborative Water Quality Testing Unit

By Laurie Anne Ashworth, 6th grade Earth Science, Martinsville MS



Kristen Shacochis-Brown, Sarah Pope, and Laurie Anne Ashworth reported on the results of their collaborative water quality testing unit at the November VAST meeting.

I participated in the two-year VISTA program for secondary teachers at the College of William & Mary. One program requirement was that we make a presentation at the Virginia Association of Science Teachers (VAST) annual conference. My classmates and I knew immediately that we would do a collaborative water quality project—it made perfect sense, as our team included a wetland scientist and two Earth Science teachers. Our collaborative teachers and schools consisted of: Kristin Shacochis-Brown, 6-8th grade Marine Science, Booker T. Washington M.S. in Newport News; Sarah Pope, 9th grade Earth Science at Booker T. Washington H.S., Norfolk; and Laurie Anne Ashworth, 6th grade Earth Science, Martinsville M.S., Martinsville, VA.

As we designed the collaborative unit, we knew that we did not want the lesson to be a cookbook lab—one where we give the students a water sample and instruct them to test it for X, Y, and Z. Water testing is an authentic scientific process, but we wanted our students to be able to compare data with other water sources. We were able to test and compare not only different water sources, but also different watersheds by gathering and sharing data across the three schools.

Working with three different schools and multiple grade levels presented a few challenges. The teachers had to be creative in lesson design. Kristin has greater freedom as she teaches Marine Science as an elective class, while Sarah and I have “regular” science classes with Standards of Learning items (SOLs) that we must teach. We decided that we would begin our collaborative when Sarah and I were teaching our Watershed and Conservation SOLs; for 6th grade these included SOL 6.5, 6.7, and 6.9.

We then developed student learning objectives and teacher objectives. For the students we wanted them to: identify different factors that affect water quality; accurately determine water quality such as pH, temperature, salinity, nitrate, nitrite, ammonia, etc.; collect, record, and analyze data; determine how human activities contribute to the health and quality of a watershed; and successfully work collaboratively throughout the unit. The teachers wanted to: use a wide variety of testing procedures to determine water quality; use 21st century technology effectively in the classroom; provide the students with real-world situations that they could explore; and demonstrate not only what happens in our local area, but throughout Virginia.

Each teacher instructed their watershed, water quality, and conservation lessons independently, but all school sites shared the information and data they collected. Martinsville students examined and tested waters from the Chesapeake Bay Watershed and their Roanoke Watershed. The Booker T. Washington schools tested the Tidewater Region. Kristin set up a Wiki Page and each teacher would upload their water quality data to the site so all the classes could compare data. Immediately, the students were engaged and excited. They not only wanted to know about the other schools’ water, but they wanted to know about the geographical regions, what it was like to live there, what the other students thought about conservation, pollution, and a host of other topics. Using the Wiki, we shared questions about living on the coast

and in the mountains, the taste of seawater versus freshwater, if there is pollution in the water near you, what is it like to be at your school, and many other questions that you would expect from 11-to 13-year-old students.

Once the students began to converse, they took an increased interest in the others’ water quality. For example, once my students in Martinsville realized that their water quality and what they do to their local watershed has an affect downstream, they wanted to know exactly what was in their water. Can we test for poisons? What about bacterial waste levels? How can we reduce run-off from parking lots? They were able and very eager to discover a method to reduce the problems that their new friends have been experiencing. They now had a personal interest in the water quality.

Martinsville students were able to test water from the Appomattox River, Dan River, James River, Lynch River, and Smith River. The students tested for several different qualities to including: pH, temperature, ammonia, nitrite, nitrate, dissolved oxygen, turbidity, and invertebrates. The Tidewater Region students tested for the same factors, but included salinity. It was interesting to note that initially all the students did not understand why we all were not testing for the same exact things—after all how could we compare data if we didn’t all collect the same data? A great teaching moment. Another teaching moment came from my Martinsville students when they were analyzing their data and noticed that all the temperatures reading were either 6.8 or 6.9 degrees Celsius. When asked, I simply gave them a “Hmm, I wonder why?” and “What do you think is going on?” response and left it for them to solve—it took a couple of weeks when someone figured out that was about the same temperature of the classroom (which so happens to be the same room where they were taking their water temperature readings). Needless to say, I was very proud of them for figuring it out on their own.

Each teacher had their own assessments along the way to measure student understanding, for example: how accurate were the measurements, did they follow safety procedures, how well did they work in their groups, as well as formative assessments addressing types of water pollutions, source of pollution, water quality factors, etc. While I did not assess students on their collaborative work with the other schools directly, they were expected to participate as part of the lab work. My students never had to be asked twice if they wanted to send a message, question, or picture to our “Chesapeake Friends.”

Overall, the unit was a success—the students gained knowledge, the collaboration was not only a useful tool, but made the topic more engaging to the students, and the teachers were able to teach a meaningful unit that enabled the students to see outside of their school or city and literally see how they can affect the world around them. As for me, I really enjoyed the six weeks we spent on the unit; I was able to be the teacher, a facilitator, and sometimes just a spectator watching these boys and girls get into the nature of science and share in their excitement as they discovered new things. After all, this is why I teach science.



Sarah Pope challenged attendees at the VAST meeting to assess water quality using only their five senses.

Opportunities:

Elementary Science Teachers, Opportunity Shenandoah National Park!

Interested in cost-free, SOL-supported, hands-on outdoor learning experiences for your science students? The Education Office at Shenandoah National Park announces its "Parks As Classrooms" Teacher Workshop for Grades 2 - 6, scheduled for Friday, September 20, 2013. Registration will begin at 8:30 a.m. and the workshop will be completed by 3:00 p.m. The workshop, education materials, and entry into the park are provided free of charge. Recertification points may be available depending on your school district's requirements. This workshop trains teachers how to use the park's Education Program, prepares teachers for ranger-led, SOL-based field trips to Shenandoah National Park, and also trains teachers in ways to incorporate the outdoors into their classroom education. Teacher Workshop attendance is required before bringing your students to the park for ranger-led curriculum-based Education programs.

If you have any questions or concerns, please feel free to call me at the number below or the Education Office at 540-999-3500, ext. 3489. This workshop is offered on a first come, first served basis. We hope you can join us!

Regina Cardwell, Park Ranger
Coordinator, Special Request Programs

<http://www.nps.gov/shen/forteachers/index.htm>

Young Meteorologist Program Targets Learning

PLAN!T NOW's Young Meteorologist Program takes students on a severe weather preparedness adventure where they encounter lightning, hurricanes, tornadoes, floods, and winter storms - all while learning about severe weather science and safety.

Developed in partnership with the National Oceanic and Atmospheric Administration's National Weather Service and the National Education Association, the program shows young people how to prepare for severe weather. A digital evolution of the National Weather Service's Owlle Skywarn initiative, the program features an interactive online game starring a 21st-century Owlle, who helps young people learn about preparing for real-life severe weather and natural hazards.

Players who complete the game earn a Young Meteorologist Certificate. Young Meteorologists are shown opportunities to put their knowledge to work in hands-on activities and community service projects. Explore online:

<http://www.youngmeteorologist.org>

American Modeling teachers Association (AMTA)

Modelers feel better prepared for and are less anxious about the Next Generation Science Standards.

Fifty Modeling Workshops in high school physics, chemistry, physical science, and biology will be offered in summer 2013, in many states including Virginia. Modeling Workshops are peer-led. Modeling Instruction is designated by the U.S. Department of Education as an Exemplary K-12 science program.

James Madison University June 24-28

Content: Mechanics

Leaders: Joe Mahler & John Makous
Two Saturday follow-up sessions during 2013-14 school year

Content: Physical Science

Leaders: Jason Lonon & Tim Coulliard

Content: Chemistry

Leaders: Janet Wells & Michelle Sebastian

Content: Biology

Leaders: Angela Gard & Derek Wagler

Contact Joe Mahler for information
(jmahler@st.catherines.org)

For information on modeling workshops:
<http://modelinginstruction.org/teachers/workshops-2013/>

Physics workshops are described at
<http://www.ptec.org/pd>

The Science of Nuclear Energy & Radiation A 4-Day Science Teachers Workshop

4 p.m. Monday July 22, through 4 p.m. Friday, July 26, 2013

Through classroom, laboratory, and field trip experience, these four days will broaden your understanding of nuclear energy and radiation by providing factual up-to-date information for you and your students.

Hosted by VCU, Department of Mechanical & Nuclear Engineering

Registration fee includes 4 Continuing Education Units, Meals, Parking and Accommodations on Campus, Teaching Materials, Geiger-Müller Counters, and Tours of the North Anna Nuclear Power Station and VCU's Nuclear Medicine Facilities

Some of the Topics to be Discussed:

- Radiation: Basics, Biological Effects, and Beneficial Uses
- Nuclear Energy & Technology
- Nuclear Power Plant Basics and Safety
- Using Geiger Müller Counters
- Energy Source Comparison & Careers in Nuclear

****Effective activities and project ideas for all levels of students will be provided in accordance with the SOL Standards.****

Registration: Cost: \$75

Deadline: June 14, 2013

For registration and more information:
<http://local.ans.org/virginia/3dSTW/>

Point of Contact: Dr. Sama Bilbao y Leon
virginia-3dstw@local.ans.org

Member Organizations:



Summer Opportunities for Teachers and Students

S.T.E.M. Camp, Jun 24-28

Regent University Campus

The Martinson Math and Science Center is offering a unique one week summer camp opportunity for rising 3rd, 4th, and 5th graders on June 24-28, 2013. Participants (20) will explore Science, Technology, Engineering and Mathematics first hand! With passionate and knowledgeable teachers, state of the art technology, and a beautiful campus, come join us for a week long STEM camp. Camp is aimed at students who want and can handle a challenge. There's something for anyone who loves to imagine, tinker, create, and enjoy hands-on-activities in an environment filled with fun, learning, and friends. Our goal is to teach children how to think and problem-solve while creating and engaging educational experiences. The camp aims to provide a safe and fun environment complete with qualified staff and excellent programming. Guest speakers, interactive activities and special presentations will complement the camp experience and students will be rewarded with a great opportunity to learn about career opportunities for when they grow up, all while having fun!

C.S.I. Camp,

July 15-19

Regent University Campus

The Martinson Math and Science Center is offering a unique one week summer camp opportunity for middle school students in grades 5-8. Participants (20) will have a chance to explore forensic science during CSI Camp. One effective way to promote children's interest in science is to teach them about forensics. Most children are interested in solving crime mysteries, and they will most likely be fascinated with forensic science. Activities such as learning about crime investigation methods and gadgets, collecting evidence at a crime scene, and studying evidence will help improve children's abilities to apply logical thinking in different situations and find solutions to problems.

F.S.I. Camp, August 5-9

Regent University Campus

The Martinson Math and Science Center is offering a unique one week summer camp opportunity for middle school students in grades 5-8. Participants (20) will have a chance to explore forensic science during Forensic Science Investigator (FSI Camp). One effective way to promote children's interest in science is to teach them about forensics. Most children are interested in solving crime mysteries, and they will most likely be fascinated with forensic science. Activities such as learning about crime investigation methods and gadgets, collecting evidence at a crime scene, and studying evidence will help improve children's abilities to apply logical thinking in different situations and find solutions to problems.

REGISTER for all Regent Uni. CAMPS:

<http://www.regent.edu/acad/schedu/>



Create a video about the brain and win up to \$1,000!

The Society for Neuroscience challenges you to produce an original, educational video that demonstrates a neuroscience concept. Whether it's an animation, song, or skit, share the wonders of science through the Brain Awareness Video Contest. Submit by **June 10** for your chance to win \$1,000 and a trip to Neuroscience 2013 in San Diego.

Anyone can enter! Submit your video with a member of the Society for Neuroscience. Find one near you with the Neuroscientist-Teacher Partner Program.

Stumped about what type of video to make? Browse past submissions for inspiration.

<http://www.sfn.org/public-outreach/education-programs/brain-awareness-video-contest>

Science Education Exchange and Visit to China

Join K-16 science educators for an extraordinary professional opportunity to visit China (Beijing, Xi'an, and Kunming) this Fall. Page Keeley, Past President of NSTA invites K-12 and university science educators to join the 2013 Science Education Delegation to China. The delegation, volunteer-led by Page Keeley, will participate in a number of unique opportunities, including exchanging ideas with science educators in China, visits to K-12 classrooms and universities, and cultural activities that highlight the unique history and natural wonders of China, including the Stone Forest in Yunnan Province and other science-related natural wonders and visits with the ethnic minorities and their schools. You can find more information about the program content and itinerary at www.peopletopeople.com/pagekeeley. There is also a guest itinerary for family or friends accompanying a delegate. If you would like more information about the program or a formal letter of invitation to obtain funding or release time for professional travel, please feel free to contact Page Keeley at:

pagekeeley@gmail.com



Virginia
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COAL



Virginia Tech's Powell River Project Research & Education Center and the Eastern Coal Council are sponsoring the 18th annual energy education program, **"PROJECT COAL TO ELECTRICITY: TEACHING - ENVIRONMENTAL ISSUES."**

Coal + Power Plants + Technologies = Clean, Dependable Electricity",
for Science and Earth Science teachers.

The program begins Sunday afternoon, July 7 through Saturday afternoon, July 13, 2013 in Wise, Virginia at University of Virginia's College at Wise. Because the course is limited to a maximum of 18 participants, pre-registration is required and must be received by June 1, 2008. There is a \$25.00 registration fee that must accompany the application. The fee is non-refundable.

Participants will be awarded a Certificate of Participation for forty-five (45) professional development hours resulting from this Professional Development Activity during the closing ceremony on Friday afternoon.

If interested please contact:

Marsha Presley, Assistant Executive

Director Eastern Coal Council

P.O. Box 858, Richlands, VA 24641

Phone: 276-964-6363; Fax: 276-964-6342

Web: www.easterncoalcouncil.org

More Summer Opportunities for Students

C-Tech2

Virginia Tech's College of Engineering invites rising high school junior and senior female students to participate in C-Tech2 - Computers and Technology at Virginia Tech from June 30 – July 13, 2013. A primary focus of the program is to help develop and sustain the interests of women in engineering. Participants will spend the majority of their time involved in hands-on activities designed to increase interest in and knowledge of applications of engineering, math, and science to real world situations. The cost of the program is \$1000 and includes all housing, meals and activities for the two week program. There are financial need scholarships available. For more information visit our website at:

<http://www.eng.vt.edu/ctech2>

Imagination

Rising 7th and 8th grade students are invited to attend a one week non-residential day camp at Virginia Tech. Imagination is a hands-on exploration of engineering led by faculty, graduate and undergraduate students. You can choose which of the two weeks the camp is offered that you would like to attend; July 15 – 19 and July 22 - 26, 2013. The cost of the camp is \$125 and includes all activity participation, lunch and snacks. There are financial need scholarships available. For more information about the camp go to our website at:

<http://www.eng.vt.edu/imagination>

OcEaNA

Rising 7th and 8th grade students are invited to attend OcEaNA (Ocean Engineering and Naval Architecture) June 17-21, 2013. The camp is a hands-on engineering program where students will build their own underwater robot and learn about the oceans and ocean exploration. This camp takes place in Hampton, VA. The cost of the program is \$100, there are financial scholarships available. For more information go to our website at:

<http://www.eng.vt.edu/ceed/oceana>



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.

Make your tax-deductible gift today. Make a real difference by supporting VA Science Educators!

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

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.

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!!!

Teacher Shares First Year as VISTA Coach



Patty Smagala Interview

Patty Smagala calls herself a teacher's teacher. "I love meeting new teachers, connecting with them, and advocating for them," she says. And, after 24 years as an elementary teacher and 8 years as an assistant principal, she's found the perfect part-time job for her early retirement years: As a VISTA coach.

This year, Smagala coached seven elementary teachers and plans to coach even more next year. While she works only with elementary teachers, VISTA also offers coaching support for middle and high school teachers. "I definitely got the support I needed starting out as a coach," she says. "The training and resources VISTA provided were really great. I love to travel and meet new teachers, and the flexible schedule fit perfectly with my retirement."

Her role this year has been to support teachers in implementing their VISTA training in hands-on, inquiry-based science and problem-based learning by serving as a classroom collaborator, guide, and extra pair of hands. Four times a school year, she goes into each teacher's classroom to do observations, videotape lessons, debrief, and provide whatever support is needed.

She is impressed with the VISTA program and the way it values teachers by offering stipends, free supplies, time to plan, and classroom support. "Really good teachers are lifelong learners. VISTA has provided them with training and lots of it; access to science and engineering experts; time for planning; and the practice time—both in camp and throughout the school year—to practice new teaching methods."

For more information or to apply as a VISTA coach, visit:

<http://vista.gmu.edu/coach>



VISTA Voices: Leadership Development for New Science Division Coordinators

Nancy Lantz, a former classroom teacher and principal who now serves as science coordinator for Rockingham County Schools, and 18 colleagues wrapped up their participation in the VISTA New Science Coordinator Academy in late April. They are now actively engaged in bringing the benefits of the statewide science education initiative to local schools.

"I was the fourth Director of Science in the county in four years. Organization and communication regarding the new science Standards of Learning and resources needed to be established," says Lantz. "The VISTA academy helped me develop a strategic plan, which provided a direction and focus for the year. I now have an organized approach to communication and sharing of resources." The program brings together new science coordinators from across the state to help build a statewide professional development infrastructure for science education and innovate science instruction for all students across the state.



Nancy Lantz

VISTA provides free professional development programs, stipends up to \$5000 for teachers, free classroom supplies, and other benefits. New science coordinators and new secondary science teachers are now being recruited to start in the program for the coming school year; applications for elementary teachers will open again in November. More information and applications can be found at <http://vista.gmu.edu>

First-Year Science Teachers Can Join VISTA Now for Next School Year

As new teachers wrap up their first year as middle or high school teachers, they've experienced first-hand the joys and challenges of the classroom. As they look ahead to next year, they can tap into a new source of support: VISTA. The VISTA program is specifically designed to support these early-career teachers, and applications for next year's cohort are still open.

As a new teacher the VISTA program has been valuable in guiding me for a smooth transition from student teaching to running my own classroom. I found a supportive environment within my VISTA peers, teachers, and mentor. I loved having people to collaborate with and learn from.

--Megan Priamo, Louisa County Middle School, Grade 6

VISTA has been a great help for my first year teaching. It has allowed me to do labs and activities that wouldn't be an option without the resources available through VISTA. It has helped me to get ideas and opinions of other science teachers, both new and experienced, to improve my teaching abilities. I have thanked the person who persuaded me to sign up for VISTA several times already; it has been extremely beneficial and a great reference as a first year teacher.

--Kaitlyn Knott, James Wood High School, Chemistry

Middle and high school science teachers entering their first or second year of teaching can get more information or apply at <http://vista.gmu.edu/middle>. Applications will remain open through at least July 15, and new teachers are encouraged to apply even if they are still seeking their first teaching job.



Megan Priamo



Kaitlyn Knott

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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

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Next Deadline for *The Science Educator* for

articles, letters to the editor, or labs is:

August 1, 2013.

The next issue of The Science Educator will be a paper issue, sent to you by the first of September. Please look for it at that time and check the VAST website if you do not receive your copy.

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