



Digital Green

ISSN 1945-7405

<http://www.VAST.org>

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

The Science Educator

Early Summer 2014 A publication of VAST, The Virginia Association of Science Teachers Vol. 62, No.5

SPARKING INNOVATION: ENHANCING STUDENT LEARNING



Virginia Science Educators to Converge at the Hotel Roanoke

November 19-22, 2014

In a climate of economic shortfalls and frustration teachers close their classroom doors and create safe, creative, and welcoming environments for their students and provide stimulating, motivating and creative activities that facilitate learning. How about you?

As a teacher are you inspired and creative? What enkindles you? How are you emboldened and invigorated? What can you do to spark and inflame yourself to be the all things to all of your students? To be prepared for every lesson with skill, knowledge, experience and finesse may be your goal, but what do you do to insure your continuous professional growth?

One way is to attend a professional development institute. In November you will have an opportunity to hear nationally famous speakers, attend workshops and sessions led by experts and colleagues that will enlighten and invigorate you in your craft. You will return to your students enriched and with a new bag of ideas and "tricks" to use the next week.

New this year's VAST PDI on Thursday there will be workshops for all levels of science educators. We are excited to include Carol Tomlinson's day long workshop, "Differentiating Instruction: Planning Instruction that Supports Academic Success for All Learners in Math and Science". Teachers, administrators, and science leadership will all benefit from Carol's expertise. You are encouraged to attend as a team from your school or district. New this year

are nine shorter workshops for teachers and administrators on various topics geared to different levels of students. See pages 5 and 6 for complete descriptions of these opportunities.

More information about PDI may be found in the March issue of The Science Educator, on the VAST Website: (www.vast.org) and on pages 4-8 of this newsletter for the latest information. Download *PDI Preview* at: (<http://www.vast.org/annual-pdi.html>)

Special Rates for Teams to Attend Pre-Conference with Carol Tomlinson



VAST has an incredible opportunity for teams (One Administrator and three Teachers) to attend the Pre-Conference with Carol Tomlinson. The cost is only \$150!

With all the changes in testing and the need to reach all students, it is more important than ever for teachers to respond to student learning needs. This begins with an understanding of how to differentiate instruction through the use of assessments! During this special session, Carol will share the simple yet powerful nonnegotiables of differentiation and the connection that assessment plays in the planning process. To register your team, go to:

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

From the Executive Director



You think you have it
but you don't.

You should look for help,
but where?

VAST is your network provider :-)

We can help you make all your connections and fast.

VAST believes in **Very Ambitious Science Teaching!**

Take a look into the upcoming PDI and see why.

Don't wait any longer...plan ahead and do it with
your fellow teachers and your principal to make the
difference in your school.

VAST will help you make the difference. Attend our
new Pre-con and do "flips" and "differentiate" all
within a few attempts. Be a VAST teacher with...

Very Ambitious Science Teaching!

Susan Booth

Encourage New Science Teachers Support 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, 12141 Winns Church Rd, Glen Allen, VA, 23059; check payable to VAST, "First Timers Award Endowment".

Thank you!!!

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

Contents:

- | | |
|--|---|
| 1. Sparkling Innovation - PDI 2014 - Thursday Workshops | 15. Supporting Science Inquiry with Technology |
| 2. Executive Director, Contents | 16. Venus: The Hottest Planet in the Solar System |
| 3. President's page | 17. Awards and Mini-Grants |
| 4. Welcome to Virginia's Science Educators from Va. DOE | 18-20. Science For All - George Dewey |
| 5. PDI Schedule | 21-22. Teacher Summer Opportunities. 2 pages |
| 6-7. PDI Pre-Conference Workshops | 23. Teacher Resources |
| 8. PDI and Hotel Registration | 24. VISTA News |
| 9. VAST PDI Speakers | 25. VAST Board 2014 |
| 10-11. Spring in Virginia - Environmental Literacy | 26. Corporate Benefactors and Members |
| 12. VIP News, VABT Request and Chemistry Happenings | 27. Science Museum of Virginia |
| 13-14. What is it like to present at a VAST PDI ? | 28. Leadership, Mission and Forms |

From the desk of the VAST President



Shirley Sypolt

The Virginia Association of Science Teachers (VAST) is Here For YOU!



You Are Invited to Attend!

Event: the 62nd VAST PDI (Professional Development Institute)

Where: Hotel Roanoke

Dates: November 20-22, 2014

Thank you to everyone that submitted a proposal!

Theme: *Sparkling Innovation: Enhancing Student Learning*

The 62nd VAST PDI will present special strands for:

- ⊗ Inquiry
- ⊗ STEM/ Environmental Education
- ⊗ Linking Science to Other Content Areas
- ⊗ Leadership for Effective Science Instruction



Don't forget the

Thursday Pre-Conference session with Carol Tomlinson, for School Division Teams

“Differentiating Instruction: Planning Instruction that Supports Academic Success for all Learners in Science and Math”

PDI Registration is now open on the VAST web site www.vast.org

Why should you participate in the 2014 VAST PDI?

VAST is a statewide organization for science educators. Science teachers, in all capacities, should be as active as possible in decision-making and the leadership of this organization. We are always looking for new voices and new points of view, so consider serving on one of our many VAST committees: Elementary, Middle, Biology, Chemistry, Earth Science, Physics, Colleges & Universities, Communications, Environmental Literacy, Advocacy, and Informal Learning, just to name a few. Check out our VAST web site at www.vast.org and let us know what else we can add to this site to make it easier for you to find information you need about science education in Virginia. What would you like to see us doing that we are not already doing?

Make the decision to come to Hotel Roanoke and use this opportunity to rejuvenate your inner scientist through networking and personal growth through education!

I want to hear from you! The entire state of Virginia is broken into eight VAST regions, each with a VAST Regional Director. VAST is here for you! We want to know what kind(s) of support you need from us. How can we make science teaching easier for you as a science educator in all capacities? Please contact me at my school email: ssypolt@hampton.k12.va.us and let me know how we (as a state wide organization) can support you as a science educator.

Shirley Sypolt
VAST President



COMMONWEALTH of VIRGINIA

DEPARTMENT OF EDUCATION

P.O. BOX 2120

RICHMOND 23218-2120

DATE: May 2, 2014

TO: Science Educators

FROM: Eric M. 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: 2014 Virginia Association of Science Teachers
Professional Development Institute

The Virginia Association of Science Teachers (VAST) has spent the past year planning for the 2014 Professional Development Institute (PDI) that will be held November 20-22, 2014 at the Hotel Roanoke and Conference Center in Roanoke, Virginia. This year's VAST PDI supports the 2010 ***Science Standards of Learning*** (SOL) by offering over 200 concurrent sessions, several field trips, and nationally known keynote speakers. Educators will be able to hear exciting speakers, network with fellow science teachers from all over the state, gain new ideas to enhance their content knowledge, and experience cutting-edge technology. This PDI provides educators the opportunity to earn recertification points and they may choose the option of earning college credit.

Educators at every level of science will find many topics of interest with which to build their expertise. VAST, a professional association with over 2000 members, advocates for high-quality science instruction for all students at all levels. The PDI provides an avenue for communication among all members of the science teaching community.

We encourage science educators to 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.

For more information regarding the Virginia Association of Science Teachers or the annual PDI, please visit www.vast.org or contact Susan Booth, Executive Director at susan.science@gmail.com.

[Table of Contents](#)



VAST Professional Development Institute (PDI) 2014

Hotel Roanoke
November 20 - 22

Schedule:

Thursday, November 20, 2014

8:00 a.m.-8:30 a.m.

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

3:00 p.m.- 7:30 p.m.

3:45 p.m.-5:15 p.m.

5:30 p.m.-6:45 p.m.

7:00 p.m.-8:00 p.m.

8:00 p.m.-9:30 p.m.

Registration Desk for Pre-Conference/Short Courses Opens

Pre-Conference Ticketed Workshop: *Differentiating Instruction: Planning Instruction that Supports Academic Success with Carol Tomlinson*

Registration Desk Opens For Short Courses/ Conference Registration

Free Short Courses Open **Pre-Registration required

General Session I: Dr. Adolph Brown

Ticketed Dinner

A Night with the Exhibitors

Friday, November 21, 2014

7:00 a.m.-6:00 p.m.

7:00 a.m.-8:30 a.m.

8:00 a.m.-9:45 a.m.

10:00 a.m.-11:00 a.m.

11:15 a.m.-12:15 p.m.

12:15 p.m.-1:30 p.m.

1:45 p.m.-2:45 p.m.

3:00 p.m.-4:00 p.m.

4:15 p.m.-5:30 p.m.

6:00 p.m.-7:15 p.m.

7:45 p.m.- 9:00 p.m.

9:15 p.m.-10:30 p.m.

Registration Desk Open

Continental Breakfast

General Session 2- Official opening Ceremony/Keynote:

Differentiation and Mindset - Carol Tomlinson

Concurrent Session 1

Concurrent Session 2

Meet your Regional Directors

Concurrent Session 3

Concurrent Session 4

Concurrent Session 5

Ticketed Awards Dinner

General Session 3: Keynote: *Flip Your Classroom: Reach Every Student in Every Class Every Day* - Jonathan Bergman

Auction/dance

Saturday November 22, 2014

7:00 a.m.-10 a.m.

7:00 a.m.-8:15 a.m.

8:00 a.m.-10:00 a.m.

10:05 a.m.-11:05 a.m.

11:20 a.m.-12:10 p.m.

12:10 p.m.-1:00 p.m.

1:00 p.m.:2:00 p.m.

2:15 p.m.-3:30 p.m.

Registration Desk Open

Continental Breakfast

General Session 4 VAST Membership Meeting.

Keynote: *Inspiring Every Student Everyday* – Andres Ruzo

Concurrent Session 6

Concurrent Session 7

Exhibits and Lunch

Concurrent Session 8

General Session 5/Keynote: *Science and Nascar*- Dr. Diandra Leslie-Pelecky

VAST PDI 2014 PRECONFERENCE



The VAST Preconference will be value intensive this year. Please make the effort to come to Roanoke on Thursday and stay through Saturday. There will be over a hundred concurrent sessions on Friday and Saturday, but Thursday workshops will offer opportunities for more in-depth learning of skills and experiences.

Pre-Conference Workshop- Thursday November 20, 2014

Dr. Carol Tomlinson

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

Academic diversity is a given in most classrooms today. Students from varied cultures, language groups, and economic strata sit side-by-side and bring with them a broad range of readiness levels or entry points, interests, approaches to learning, and motivations to learn. Understand how in many settings, the goal of teachers is to help the full range of students succeed with complex, high-level curriculum.



Participants will:

- Explore the non-negotiable of effective differentiation using classroom video clips, lesson plans, articles, discussion, and presentation.
- Investigate the implications of those non-negotiable for classroom practice.
- Leave with strategies for developing more challenging and responsive heterogeneous classrooms.

Cost:

VAST Members: \$75

Non-Members: \$95

Students: \$75

(registration required)

Teams: \$150 for 4 (Administrator +3 Teachers)* This price is only for attendance at the pre-conference event.

This price includes a continental breakfast. Lunch will be on your own.

Free Short Course Workshops- Thursday November 20, 2014

3:45 p.m.-5:15 p.m.

• Why are Pencils Yellow? - Elementary Teachers

Presenter: Dr. Jenny Sue Flannagan

Why are pencils yellow? How were diapers made and how do they connect to matter?

Thinking critically begins the moment we become curious, ask questions, and seek to find the answers to questions. Through experiments associated with topics such as matter, electricity, and other great activities, teachers will learn how to build research opportunities to unlock the scientific discoveries of the past. (grade level focus - elementary) Free Materials!

• Who asks the QUESTIONS?- Middle School Teachers

Presenter: Anne Moore

The content may be different, but the inquiry process is the same! Come experience various lessons and topics across the grade levels of middle school that will support teams in building a vertical articulation of inquiry modules. Hands-on activities will guide your tour through general, life, and physical science topics.

• Student Research: Yes, There Is a Role in Today's Classrooms! - Middle/High School Teachers

Presenter: Dr. Julia Cothron

The Next Generation Science Standards advocate scientific research experiences for all students, with such experiences an integral part of course-related classroom and field experiences at the secondary level. Building upon her classic work, Dr. Cothron will offer updated strategies for helping students move from investigation to experimentation, modifying classroom labs to emphasize scientific inquiry practices, a "scientific research brief" to support team mini-projects within the classroom and using multiple forms of assessment to support student growth and success.

Free Short Course Workshops- Thursday November 20, 2014 (continued)

3:45 p.m.-5:15 p.m.

• Leadership Matters:

Building a Differentiated Science Program by Developing Teacher Expertise - Administrators

Presenter: Dr. Kelly Hedrick

If the goal is the development of expertise in responsive teaching, how do we all get there? Some folks will take the expressway, while others need the scenic route. It is important to understand the stages and needs of the learner at every step toward expertise in responsive teaching. Everyone will need support, information, and opportunities for growth along the way. In this session, participants are given a tool for thinking about the journey toward expertise in differentiation and methods for guiding colleagues. For anyone who is responsible for staff development and assisting others in responsive teaching, this session provides a framework for developing expertise in differentiation among a wide range of educators including administrators.

• Inquiry: How Simply Changing the Question Can Shift the Focus - Biology Teachers

Presenter: Stephen Biscottee

Repeat after me: “All students can do inquiry. Inquiry is not a one-time thing. Inquiry increases student interest and learning. I will attend this short course.” The presenter will take the participants through the process of turning a traditional cookbook lab lesson into a student-centered inquiry-based learning opportunity grounded in the Virginia Standards of Learning (and not just the inquiry ones). Working in small groups by content area, participants will develop (and leave with) an inquiry activity for their classroom based on their own standards, resources, and students. Samples for each content area will be provided, but participants are encouraged to bring their own materials (lessons, cookbook labs) to reconstruct.

• Exploring Inquiry with Factors Affecting Enzyme Activity - Biology Teachers

Presenter: Jeremy Dove

In this short course teachers will examine different ways their students can use the various levels of inquiry to explore several factors affecting enzyme function. Teachers will explore how cook book labs can be modified to allow for students to truly “investigate and understand” SOL topics and gain a deeper understanding of content.

• Creating Inquiring Minds in a Limited Time Frame - Chemistry Teachers

Presenter: Tammy Stone

Science teachers know that authentic experiments and experiences are the paramount way to develop critical thinking and foster the nature of science. In today’s age of assessments though, how does a teacher make chemistry real and relevant so that their students are inquiring, and investigating while covering all of the chemistry standards of learning. This session will explore lesson plan ideas and labs that have been successfully used in chemistry classes to help all students inquire and investigate while being successful on the standards of learning.

Free Short Course Workshops- Friday, November 21, 2014

10:00 am.- 12:00 p.m.

• Rigor and Learning Engagement through Quality Curriculum & Instruction - Administrators

Presenter: Dr. Kelly Hedrick

Where do rigor and engagement come from? With science standards as our platform, but we have to align them with big ideas, student-centered learning strategies, and scaffolding techniques to support a range of learner needs. This is a tall order, but completely possible. In fact, when working with a range of learners it is a moral imperative! In this session, participants will identify where big ideas come from through concept-based curriculum and look at a model for aligning worthy learning targets with instructional strategies and scaffolding methods in the science classroom. The result is a rigorous curriculum delivered through differentiated instruction.

• Analyzing Experimental Data: Looking Through Different Lenses - All

Presenter: Dr. Julia Cothron

For years, I’ve listened to their arguments: science teachers say they integrate mathematics in the classrooms, mathematics teachers say “no, it’s not mathematics, its computation”. Building upon her classic work with data analysis, and using recommendations from the Next Generation Science Standards, Dr. Cothron will offer strategies for going beyond algorithmic approaches for data analysis including defending data collection techniques, explaining methods of data analysis, using mathematics and arguing from evidence.

**Calling All Virginia Science Educators!
Come to the Star City for the VAST PDI
November 19-22, 2014
Hotel Roanoke, Roanoke, Virginia**



Registration for VAST PDI

FULL PDI Registration includes admission to all general and concurrent sessions (Thursday afternoon-Saturday afternoon) exhibits, and continental breakfast Friday and Saturday. Nonmember registration includes annual VAST membership.

PDI Registration

Early bird must be ordered and paid by October 18, 2014

Current Member Registration:

\$150.00 - Member Early bird professional registration
(Full Conference Th afternoon-SA)
\$75 Pre-Conference Workshop with Carol Tomlinson

Nonmember Registration:

\$175.00 - Nonmember Early bird professional registration (Full
Conference Th afternoon-SA; includes a 1 year VAST membership)
\$100 Pre-Conference Workshop with Carol Tomlinson

Student Registration:

\$70.00 - Early bird student registration (Includes annual
membership)
\$30 Pre-Conference Workshop with Carol Tomlinson

Standard Registration After October 18th, 2014

\$180.00 - Member Standard professional registration (Th
afternoon-SA)
\$100-Member Pre-Conference Workshop with Carol
Tomlinson
\$205.00 - Nonmember Standard professional registration (Th
afternoon-SA; includes 1 year VAST Membership)
\$125-Nonmember Pre-Conference Workshop with Carol
Tomlinson
\$100.00 - Standard student registration
\$110-Student Pre-Conference Workshop with Carol Tomlinson

PDI Presenters Registration

Early Bird Option must be ordered AND PAID BY September
1, 2014

\$130.00 – Member Early Bird presenter registration
\$50-Member Pre-Conference Registration for Carol Tomlinson
\$155.00 – Nonmember Early Bird presenter registration
\$75-Nonmember Early Bird Presenter Registration for Carol
Tomlinson

Please registration on the VAST website. To register go
to:

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

Hotel Roanoke

For more than 125 years Hotel Roanoke has been welcoming guests to the Roanoke Valley with luxury, style, hospitality and the latest in amenities and services. The hotel features 73 king bedded guest rooms, 185 rooms with two double beds and 38 single queen bedded guest rooms and complimentary WiFi Internet access in all guest rooms.

Hotel Information!

VAST has negotiated special discounted room rates with the Hotel Roanoke. Make your reservations calling no later than Friday, October 24, 2014. Any additional requests for reservations received after this date will be honored on a rate and space available basis only.

Please call the hotel directly at 540-985-5900 or toll free at 866-594-4722 (between the hours of 8:00am - 5:30pm Monday thru Friday) and ask for the Virginia Association of Science Teachers / VAST room block.

For more information on hotel and travel to this year's conference, go to:

<http://www.vast.org/hotelinfo.html>

VAST Professional Development Institute

Speakers 2014

**November
2014!**



Reaching all students? Differentiation? Engineering? How about Flipping?

Do any of those topics interest you? We have a wide range of speakers this year that will provide you with a wealth of free information from nationally recognized speakers that will be included in your registration price! For more information go the VAST website and watch for VAST Newsletters and E-Notes!

Pre-Conference I - November 20, 2014 8:30 a.m.-3:30 p.m.

Dr. Carol Tomlinson - *Differentiating Instruction: Planning Instruction that Supports Academic Success for All Learners*

Academic diversity is a given in most classrooms today. Students from varied cultures, language groups, and economic strata sit side-by-side and bring with them a broad range of readiness levels or entry points, interests, approaches to learning, and motivations to learn. Understand how in many settings, the goal of teachers is to help the full range of students succeed with complex, high-level curriculum.

Participants will:

Explore the non-negotiables of effective differentiation using classroom video clips, lesson plans, articles, discussion, and presentation.

Investigate the implications of those non-negotiables for classroom practice.

Leave with strategies for developing more challenging and responsive heterogeneous classrooms.



Thursday Keynote

Dr. Adolph Brown - *Use Core Competencies Needed for Success and Combine Academic and Citizenship*

Dr. Adolph Brown is the Founder, President, and CEO of The Leadership & Learning Institute. As a former public school educator & credentialed administrator, full tenured university professor, university dean & businessman, Dr. Brown has studied and worked along side highly successful leaders and educators. He has taken his over 25 years experience and has developed core competencies that are expressed in everything successful business leaders and educators do.

This keynote will explore the pedagogy of the marginalized, while exposing hidden biases. This talk will bridge the "academic curriculum" of reading, writing, and arithmetic with the "citizenship curriculum" of a student's personal classroom experiences.

Friday Keynote

Dr. Carol Tomlinson - *Differentiation and Brain Research*

In this session, Dr. Tomlinson will talk about the key principles of differentiation and how they are connected to brain research.

Friday Keynote

Jon Bergmann - *Flip Your Classroom: Reach Every Student In Every Class Every Day*

Learn from Flipped Classroom Pioneer Jon Bergmann as he walks through his transformation from a twenty year lecturer to a flipped class pioneer. He will take you on his journey and show how the flipped class can transform today's educational climate. The Flipped Class allows teachers to have more face-to-face time with students, allows for real differentiation, causes student to take responsibility for their learning, and allows students to master material.

Saturday Keynote

Dr. Diandra Leslie-Pelecky - *How to Include STEM in Your Curriculum*

Science, technology, engineering, and mathematics play a unique role in motorsports. While other sports can be analyzed for STEM themes after the fact, racing is one of the few sports in which you must get the science, math, and engineering right in order to win. Motorsports are also unique in showcasing engineers on television, radio, and on the web, thus providing role models for those students constantly asking, "When am I ever going to use this?" Join Dr. Diandra Leslie-Pelecky as she introduces some existing classroom resources and addresses the biggest challenge in using real-life situations to teach STEM topics: What to do when the approximations and simplifications are non-negligible as they are on a racetrack.

Saturday Keynote

Andrés Ruzo - **Geoscientist** - **A National Geographic Young Explorer Grantee.** Andrés works to promote the use of geothermal as an alternative energy source. Andrés will share his adventures traveling around the world as he studies geology and collects data. His work is inspiring and demonstrates how real science can benefit local and global communities.



Spring in Virginia

Cindy Duncan, Chair of the VAST
Environmental Literacy Committee



CC Spring Peeper, Brian Gratwick

Spring in Virginia awakens my senses each year as the days grow longer and the temperatures slowly rise with each passing day. I find it impossible to stay indoors this time of year when so many amazing changes are occurring outdoors in nature. My first indication that Spring is arriving are the sounds of the Spring Peepers, *Pseudacris crucifer*. These small nocturnal frogs of tan, gray or dark brown with the “X” on their backs are rarely seen, but often heard in March, as the male Spring Peepers are calling for a mate. During the day, my friend the Eastern Towhee, *Pipilo erythrophthalmus*, a large and striking species of sparrow, sings his song, “Drink your teeee” and has me heading for the kitchen to get a sweet tea to sip as I slumber in the sunshine. As I enjoy the refreshing sweet tea, my eyes absorb the beauty of the tulips, *Tulip liliaceae*. These perennial bulbous plants with lovely showy flowers remind me of how time, once again has passed through another cycle. Towering twenty to thirty feet above the tulips is a beautiful Dogwood Tree, *Cornus florida*, exploding with white bracts centered with small clusters of yellow flowers, shouting that Winter is finally over.



Dogwood Tree, *Cornus florida*

closely linked to those natural systems. I would celebrate Earth Day, April 22nd, with an “Ecological Picnic”, teaching students prior to Earth Day, to think about the resources they utilize each day. Students were taught to pack ecological lunches that would produce the least amount of trash by utilizing recyclable or re-useable containers. After the grand picnic, students measured the separated trash and recycled items and celebrated their success through writing and graphing results. Seeing the connection between the natural world and what they were required to learn in the classroom was invigorating for my students. An in-depth study of the importance of trees in the environment would culminate in an Arbor Day tree planting on April 25th. Students would return for years to see what impact the trees they planted had on the environment. Using the environment as a context for learning was a very motivating force during the Spring when thoughts were blooming towards summer break and the students still mastered the content and skills in a broad range of academic standards while developing their knowledge about the environment and their connection to it.



Eastern Towhee,

CC Eastern Towhee, Bill Thompson/USFWS



Red Tulips, by Petr Kratochvil

As a former classroom teacher of 17 years, I know that in the classroom, Spring has its own way of showing itself. Sunburnt faces after spring break, the daunting preparation for SOL testing and final exams, and the anticipation of graduating to the next level of an educational process brings promise of winter’s end. In my classroom, I utilized the changes occurring in nature as opportunities to teach my students about the responsibilities they have to care for the natural environment and how they are so



Sarah Bodor/Chesapeake Bay Foundation/cbf.org

Our educational audience as classroom teachers has changed in the last decade and is reflected in the environment that students are immersed in. Children ages 8 to 18 spend more than 53 hours a week online or in front of some type of electronic media. A focus on academic standards has produced a lack of school-based

opportunities for students to learn about and spent time in the natural environment. Not a day goes by when we don't read or hear something about the growing environmental problems and the educational challenges facing our communities. Ultimately, we are producing future generations unprepared to face the critical challenges of the environment in our rapidly changing world.

Fortunately, Virginia is on a course to help improve students' awareness to the connections between natural and social systems in their daily lives. Through Environmental Education programs developed at state levels, students are becoming Environmentally Literate through their K-12 educational experience. Our watershed neighbor, Maryland, is the first state in the nation to require an Environmental Literacy graduation requirement for every student. California has a K-12 curriculum, "*Education and the Environment Initiative*", developed with the sole purpose of helping students to identify and recognize the connection between what they do on a daily basis and how it affects the environment in their community.

A team of Virginia environmental educators have developed an Environmental Literacy "White Paper Plan" that states the following:

As educators, we have a responsibility to provide future generations with the knowledge, skills, and motivation needed to make informed environmental decisions that are certain to be part of their future. We need to give our students a strong educational background in natural resources conservation and environmental problem-solving so that they may compete professionally in the many careers related to these fields. We should encourage more outdoor time for our students - time spent in parks and forests, on lakes and rivers, and in schoolyards or nearby nature sites - helping them develop a sense of place and pride for their own communities. Stewardship is everyone's responsibility, and now is the time to ensure that our students achieve the environmental literacy necessary to help keep Virginia a naturally rich place to live and work.

The term 'environmental literacy' means having a fundamental understanding of ecological principles, the systems of the natural world, and the relationships and interactions between natural and man-made environments.

According to the Environmental Literacy "White Paper Plan", a state Environmental Literacy plan in Virginia **may** include goals to:

- Prepare students to understand ecological principles, the systems of the natural world, and the relationships and interactions between natural and man-made environments;
- Provide field and hands-on experiences as part of the regular school curriculum;
- Provide environmental service learning opportunities;
- Provide targeted professional development opportunities for teachers designed to improve content knowledge related to natural resources and the environment;

- Provide targeted professional development opportunities designed to improve pedagogical skills in teaching about the environment and utilizing interdisciplinary, field-based and research-based learning; and STEM subject content knowledge and tools.

Another positive step Virginia is taking towards providing students with the skills they need to address the challenges and opportunities of the 21st century, is in the development of a "Virginia No Child Left Inside Coalition". This statewide coalition of diverse member organizations is launching to advocate at the state and local level for programs and policies that ensure every student in Virginia has access to rich educational experiences that provide them with the skills and knowledge needed to be responsible, environmentally literate citizens.

Membership in the coalition will be broad and diverse, including educational institutions, conservation and recreational organizations, businesses, health-care and faith-based groups, united by their belief in the value of environmental education in securing a healthy and successful future for Virginia's future citizens. For more information, or to join the Coalition, contact Bill Portlock, bportlock@cbf.org

I have been out of the classroom for 10 years now; however, my passion for the natural environment has brought me to a career that focuses on teaching educators and administrators to use the environment as a context for learning. Knowledge is the key to solving the environmental issue our students will inherit. Since my very first day of teaching, I have followed the advice of a Senegalese environmentalist, Baba Dioum. He states, "*In the end we will conserve only what we love. We will love only what we understand. We will understand only what we are taught.*" Are you ready as an educator in Virginia to meet the challenges of preparing Virginia's students for the future environmental challenges, as well as providing them with academic successes and the skills needed to act as citizen in this changing world? Let's support environmentally literacy in Virginia and conserve all the natural resources Virginia has to offer, not only in the Spring, but all year long.

Cindy Duncan



Cindy Duncan is a Board member of VAST and Chair of the recently formed Environmental Literacy Committee. Her role at VAST is to provide teachers across Virginia with information and resources pertaining to environmental education/literacy and outdoor education. Cindy is the Chesapeake Bay Foundation's Teacher Professional Development Coordinator for both Virginia and the District of Columbia. She can be contacted at cduncan@cbf.org.



President Timothy Couillard, announced that the Virginia Instructors of Physics elected new leadership at their April 26th spring meeting at UVA. Jeff Steele is the new president and Tony Wayne will be serving as vice president.

“V-I-P” stands for the Virginia Instructors of Physics -and physical science. VIP is a less than non-profit organization sponsored by the University of Virginia. It is an organization for all levels of physics and physical science education in the state of Virginia. Its purpose is to end the isolation felt by so many high school physics and physical science teachers. (As many physics teachers are the only ones in their county.) This is done through the University of Virginia’s sponsorship of an annual meeting, an e-mail listserv a printed newsletter that comes once a year and support for the VAST through the sessions we present. Membership is free to all educators teaching in the state of Virginia. For more information, resources, and membership go to <http://www.vast.org/vip/> .

2014 VABT Conference: Call for Presenters



The 2014 Virginia Association of Biology Teachers (VABT) will be held at the *Smithsonian Conservation Biology Institute at the Blanding Research Station in Front Royal, VA September 12 to 14. Overnight lodging is on a first-come basis. Tours of the facility, night field trips, and talks by researchers are just some of the expected highlights. We you invite you to share your special classroom activities and knowledge with your colleagues by being a

presenter. Please contact Kathy Frame (chuckframe@aol.com) for more information.

*The Smithsonian Conservation Biology Institute in Front Royal (formerly the Conservation and Research Center) started primarily as a breeding center for endangered birds and mammals. Today, the black-footed ferret, Eld’s deer, and several species of Pacific island birds are being bred to maintain genetic diversity and provide reserves for highly endangered species.

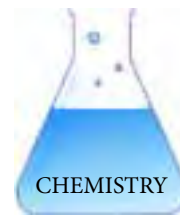
Chemistry Happenings

Jill Barker,

VAST Chemistry Chair

Millbrook High School,

Frederick County Public Schools



Here are some professional development opportunities that chemistry teachers may wish to explore!

- **American Association of Chemistry Teachers (AACT)** The American Chemical Society is in the process of organizing AACT, which will be starting in September. The goal of this association is to provide a national resource for chemistry teachers. Currently they are looking for outstanding chemistry lessons as part of their roll out. More information (including ways to get updates) is found at <http://www.acs.org/content/acs/en/education/educators/aact.html>
- **2014 Biennial Conference on Chemical Education (BCCE)** – This conference of secondary and collegiate chemistry educators takes place August 3-7, 2014. It is being hosted by Grand Valley State University in Allendale, MI. The focus of this year’s conference is incorporating sustainable chemistry in the classroom. More information is available at <http://www.bcce2014.org/>
- **2014 POGIL Southeast Regional 3-Day Workshop** This workshop, held at East Tennessee State University in Johnson City, TN, meets from July 27-July 29, 2014. It has both introductory and intermediate tracks to explore POGIL methodology as well as enhance facilitation skills and activity development. More information is available at <https://pogil.org/events/2014-pogil-southeast-regional-workshop> .
- **Modeling Instruction** – Both introductory and intermediate chemistry modeling workshops (along with other subjects) are being held through the Content Teaching Academy at James Madison University from June 23-27, 2014. The introductory workshop is limited to school districts that are part of the JMU Math and Science Partnership Grant, but any unfilled spots should be made available by mid-April. Specific information about the Content Teaching Academy workshops are located here: <http://cta.jmu.edu/>
Longer modeling workshops (3 weeks) are also available outside of VA. The American Modeling Teachers Association (AMTA)’s website has information on the workshops outside of VA: <http://modelinginstruction.org/teachers/workshops-2014/>

Teaching & Enriching SCIENCE
with the
T.E.A.M. Approach
Region IV Mini-Conference
Save the date 7/30/2014!
Contact region4@VAST.org for more information.

What is it Like to Present at a VAST PDI

Kristine Mitchell

Teacher, Star of the Sea School

When I was first asked to present at the VAST PDI, my initial reaction was “no way!” Talking in front of people is so out of my comfort zone. People have said to me that since I teach that it should not be a problem, but it is. It is so very different. The audience is different, the situation is different, the stress level is different. So after my initial reaction, I thought it over some more and thought that I should do more things that are not in my comfort zone and send in a proposal. Of course, I was always thinking in the back of my head that there was no way that I would be chosen to present. No way. Once I was chosen, the anxiety I initially had ramped up a thousand percent.

Now I had to plan out every detail of what I was going to say and do. (Detailed planning is something I do in my science lessons anyway so I don’t forget anything.) The first thing I thought was what would I want to see if I was presenting to me? I don’t like to be talked to. I like to do. I would want to build or play with something during the presentation. “What haven’t I seen in any other presentation?” is the essential question I asked myself. I ended up presenting a lesson I use with my fifth graders concerning Rube Goldberg machines and physics. My students love this lesson. It is STEM-based with a lot of trial and error. It also is a great way to review key vocabulary involving the different types of simple machines, Newton’s three laws of motion, and potential and kinetic energy.

I chose not to have any handouts during the presentation since it would have been a lot of paper! Instead, I had “treat bags” set up on the tables (one per expected participant) with the supplies (1 ping pong ball, 3 marbles, 1 pipe insulator half, 4 styrofoam cups, 1 plastic fork, 1 plastic spoon, 1 paper plate, and a 2-meter length of string) for the lesson and a label with the Wiki page (<http://teachermutt.wikispaces.com/Rube+Goldberg+Projects>) that contained my lesson plan, worksheets, samples of student work, and websites I use to teach the lesson for the participants to download at their leisure. I essentially treated my presentation like a lesson and this lesson started with a music video that features an elaborate Rube Goldberg machine. The video was followed by a brief review of key vocabulary and then it was time for the participants to use the supplies in their bags to make a ping pong ball go into a Styrofoam cup using at least three transfers of energy. (I brought scissors and masking tape also but asked the participants to leave them after the session since these were my class supplies.) As in the classroom, some groups were able to complete the task quickly while others struggled. Those that finished quickly were congratulated and instructed to add a fourth transfer of energy so as to give more time for the others to accomplish the task. After the task, it was time to show some videos of what fifth graders can do on their own when tasked to pop a balloon with at least six transfers of energy.

I then talked about the many uses of Wikispaces, including using them as student online portfolios. I am a huge fan of Wikispaces. It is free and is intended to be a collaborative-type site for the sharing of ideas. My first wiki was just that—students created Oregon Trail diaries and uploaded hand-drawn pictures (<http://sostraildiaries.wikispaces.com/home>). Later, I discovered that I could use it to house all of the online activities I have my students use for the year in one convenient location (<http://sos5.wikispaces.com/home>). After taking an online teaching methodology class, I then used it to create a couple of self-directed online lessons (<http://sosregions.wikispaces.com/home> and <http://soshealth.wikispaces.com/>

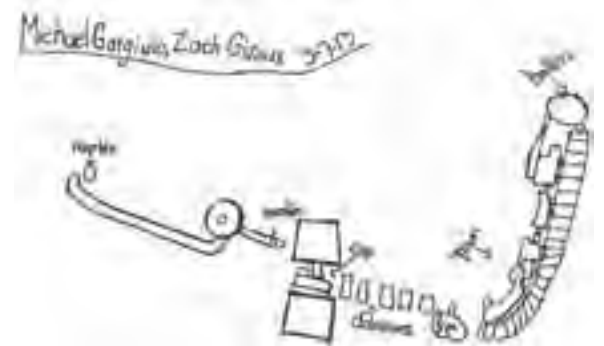


Rube Goldberg Projects

Popping A Balloon



Another Example with Its Corresponding Blueprint



home). What I focused on at the VAST PDI was using Wikispaces as a place for students to display their work online. I teach both fourth and fifth graders so they keep their wiki page for both years and can then see how they have grown scholastically. Students have essays, graphs (<http://nces.ed.gov/nceskids/createagraph/>), movies, Glogs (www.glogster.com), powerpoints, Vokis (<http://www.voki.com>), puppet plays (made on the Sock Puppets app), and, yes, movies of their Rube Goldberg machines on their individual wiki pages (<http://sos2017.wikispaces.com/home>).

When I finished presenting, I was glad that I had done it. I had received good feedback even though I did end up stuttering terribly towards the end. I presented again this year, got nervous, and started a little early, but again I received a good response. I would recommend presenting at a conference of your peers, even if it isn't science. Make sure you map out what you are going to say and do and practice it. It is good that we share ideas with each other. You may be doing something that nobody else is. Remember that you don't have to do it alone either. You can get together with a colleague and present an idea together, which is what I am thinking of doing next time.



Supporting Science Inquiry with Technology



July 24, 2014
Western Albemarle High School

Audience: K-12 Science Teachers

This free one-day event will be held from 9:00 AM to 3:00 PM at Western Albemarle High School in Charlottesville, Virginia.

Experience an in-depth day of learning for science teachers. Four-hour workshops for K-5, 6-8, and 9-12 science teachers will provide a hands-on interactive approach to organizing and implementing inquiry based learning supported by technology. Led by experienced teachers and coaches, participants will be able to plan and collaborate with science teachers from their own and other divisions. Participants will be able to continue the collaboration after the workshop through the use of Edmodo.

Supporting Science Inquiry with Technology is offered through a partnership between the following organizations:

- * Learning Forward Virginia (LFVA)
- * Virginia Association for Supervision and Curriculum Development (VaSCD)
- * Virginia Association of Science Teachers (VAST)
- * Virginia Society for Technology Educators (VSTE)
- * Virginia School-University Partnership (VSUP)

**This is a
FREE event!**

Schedule:

9:00 to 9:30 Registration
9:30 - 10:00 General opening session: welcomes, overview of the day
10:00 - 12:00 First block
12:00 - 1:00 Lunch
1:00 - 3:00 Second block
3:00 - 3:30 Closing session: door prizes, etc

Register at:

<http://events.constantcontact.com/register/event?llr=67fu7klab&oeidk=a07e99xx7tsf0b56caf>

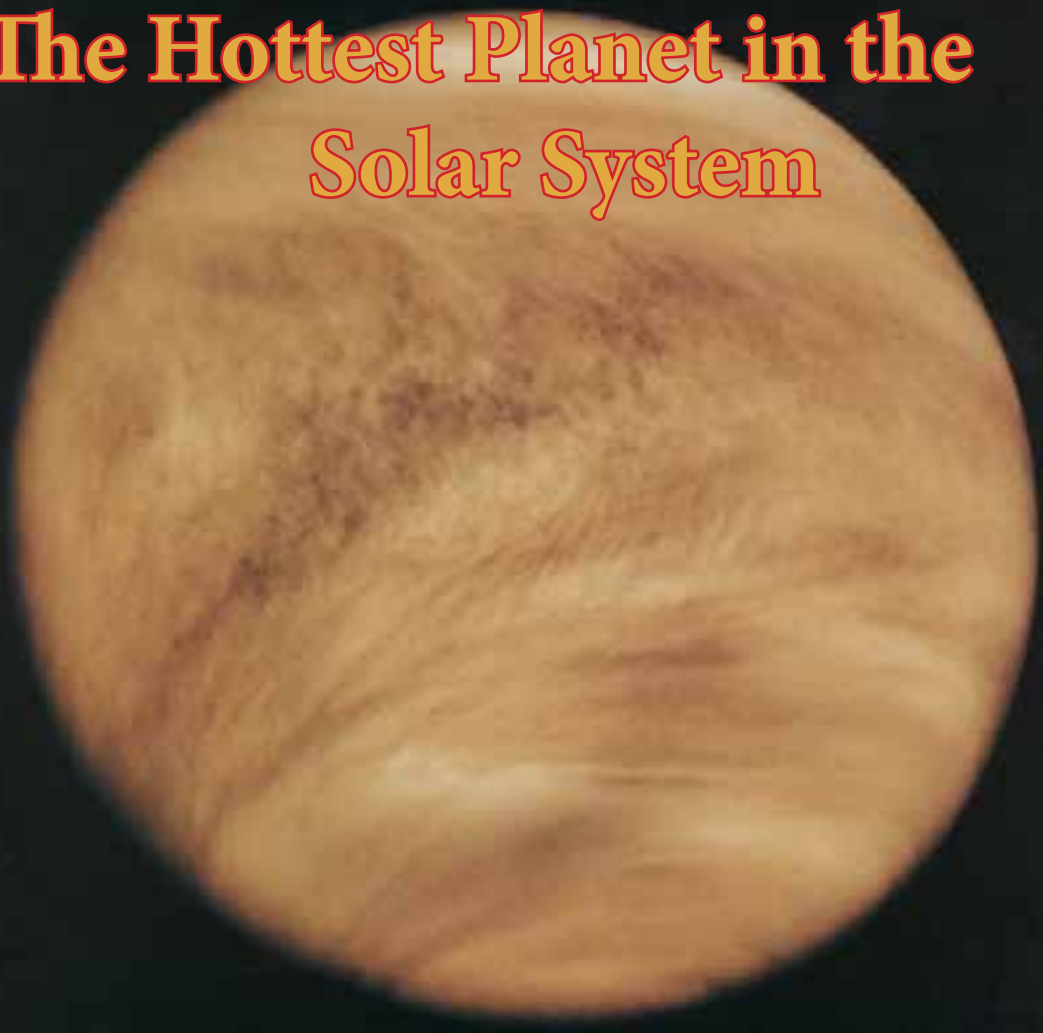
Western Albemarle High School
5941 Rockfish Gap Turnpike
Crozet, VA 22932

Venus: The Hottest Planet in the Solar System

By
Dr. Ethan Siegel



*NASA's Pioneer Venus
Orbiter image of
Venus's upper-
atmosphere clouds as
seen in the
ultraviolet, 1979.*



When you think about the four rocky planets in our Solar System—Mercury, Venus, Earth and Mars—you probably think about them in that exact order: sorted by their distance from the Sun. It wouldn't surprise you all that much to learn that the surface of Mercury reaches daytime temperatures of up to 800 °F (430 °C), while the surface of Mars never gets hotter than 70 °F (20 °C) during summer at the equator. On both of these worlds, however, temperatures plummet rapidly during the night; Mercury reaches lows of -280 °F (-173 °C) while Mars, despite having a day comparable to Earth's in length, will have a summer's night at the equator freeze to temperatures of -100 °F (-73 °C).

Those temperature extremes from day-to-night don't happen so severely here on Earth, thanks to our atmosphere that's some 140 times thicker than that of Mars. Our average surface temperature is 57 °F (14 °C), and day-to-night temperature swings are only tens of degrees. But if our world were completely airless, like Mercury, we'd have day-to-night temperature swings that were hundreds of degrees. Additionally, our average surface temperature would be significantly colder, at around 0 °F (-18 °C), as our atmosphere functions like a blanket: trapping a portion of the heat radiated by our planet and making the entire atmosphere more uniform in temperature.

But it's the second planet from the Sun -- Venus -- that puts

Check out our great sites for kids: <http://climatekids.nasa.gov>
<http://scijinks.gov> <http://spaceplace.nasa.gov>

the rest of the rocky planets' atmospheres to shame. With an atmosphere 93 times as thick as Earth's, made up almost entirely of carbon dioxide, Venus is the ultimate planetary greenhouse, letting sunlight in but hanging onto that heat with incredible effectiveness. Despite being nearly twice as far away from the Sun as Mercury, and hence only receiving 29% the sunlight-per-unit-area, the surface of Venus is a toasty 864 °F (462 °C), with no difference between day-and-night temperatures! Even though Venus takes hundreds of Earth days to rotate, its winds circumnavigate the entire planet every four days (with speeds of 220 mph / 360 kph), making day-and-night temperature differences irrelevant.

Catch the hottest planet in our Solar System all spring-and-summer long in the pre-dawn skies, as it waxes towards its full phase, moving away from the Earth and towards the opposite side of the Sun, which it will finally slip behind in November. A little atmospheric greenhouse effect seems to be exactly what we need here on Earth, but as much as Venus? No thanks!

Check out these "10 Need-to-Know Things About Venus":
<http://solarsystem.nasa.gov/planets/profile.cfm?Object=Venus>

Kids can learn more about the crazy weather on Venus and other places in the Solar System at NASA's Space Place: <http://spaceplace.nasa.gov/planet-weather> .



VAST Mini-grant Program Accepting Applications for 2014

Got an innovative idea that needs some seed money? The VAST Awards and Grants committee is now taking applications for the 2014 Mini-grant program.

The VAST grant program includes the VAST Education Mini-grant, the Tidewater Alliance of Chemistry Teachers' (TACT) Chemistry Education Mini-grant, and the American Institute of Professional Geologists (AIPG) Mini-grant.

Team applications are welcome, however one person must be designated as the Project Director. To qualify for the Mini-grant program, the Project Director must a) be a current member of VAST (dues paid for 2014), b) have a minimum of three years of experience as an elementary or secondary science classroom teacher, and c) be currently employed as a classroom teacher in the Commonwealth of Virginia.

The Awards and Grants committee is looking for projects that will directly impact student learning in the science classroom. Proposals will be evaluated the originality,

creativity, and cost effectiveness of the proposals. Ideally, the projects that are funded will provide the students with new experiences and make possible new scientific investigations.

Mini-grant funds may be spent for supplies, equipment, printing, and other materials essential to the project. Mini-grant funds are not intended for student travel (field trips) or for the personal remuneration of the grant recipients. All materials will become the property of the school/school system in which the Project Director is employed at the time the grant is awarded.

The deadline for submissions is June 1, 2014. The applications are available on the VAST website:

<http://www.vast.org/grants.html>

We look forward to supporting your ideas for enhancing your students' science experience!

Timothy Couillard

Awards and Grants Committee Chair

Nominations Open for the 2014 VAST RISE Awards Know someone doing fantastic work in the Science Education field?

The Virginia Association of Science Teachers is now seeking nominations for the 2014 VAST Recognition In Science Education (RISE) awards.

VAST recognizes excellence in the following categories:

- o Elementary (preK-5)
- o Middle school (6-8)
- o Biology
- o Chemistry
- o Resource Teacher (examples: Technology, Science Resource, Etc.)
- o Science Educator (non K-12 classroom) Examples Science Supervisor, Information Education, Principal, Etc.)
- o University/College Faculty
- o Community Partnership (example: Local Business, Government, Non-profit Organizations, Etc.)
- o Earth Science
- o Physics
- o Environmental Science
- o At-Risk Students (K-12)

Note: Nominees do NOT need to be a member of VAST.

Awardees will be recognized at the November 2014 VAST PDI and will be reimbursed up to \$150 to attend the VAST PDI. The deadline for nominations is August 20, 2014.

Nomination forms are available on the VAST website: <http://www.vast.org/vast-awards.html>

We look forward to recognizing the wonderful work done in our Science Education community!

Timothy Couillard, VAST Awards and Grants Committee Chair

<http://www.vast.org/vast-awards.html>

BIG! Or the Importance of Being Small

In those years, people will say, we lost track
of the meaning of *we*, of *you*
we found ourselves
reduced to *I*
and the whole thing became
silly, ironic, terrible:
we were trying to live a personal life
and, yes, that was the only life
we could bear witness to

But the great dark birds of history screamed and plunged
into our personal weather
They were headed somewhere else but their beaks and pinions
drove
along the shore, through the rags of fog
where we stood, saying *I*

—*In Those Years*
Adrienne Rich

“Epic,” “monumental,” “inspiring,” “spectacular,” “STEMulating,” “historical” – these were the adjectives used to describe the third biennial Science and Engineering Festival held 26-27 April, where 325,000 people of all ages attended at the Washington DC Convention Center. Prior to that climactic weekend, over 180,000 students and teachers had heard from one of the Nifty Fifty speakers, scientists and engineers who gave brief programs in schools, including my own, where two presenters spoke about evolution and architecture. Personalities like Bill Nye, Mike Rowe, Matt Kaplan, Art Benjamin, David Macaulay, Chris Hackett, Karen Panetta, Maya Gaheira, Lucy Sanders, and Michio Kaku entertained with STEM activities from extreme sports, to frontiers of the mind, to surviving an apocalypse, to mathemagic, to planetary radio, to musical tours of the universe. The Washington Metro system ran extra trains and open turnstiles in efforts to handle the crowd.

The robotics area was especially interesting because my own high school had a booth and students showed many younger children how to put their own robot through its paces. In fact, throughout the convention hall, as on Metro cars, the excitement and involvement of entire families was palpable. The festival postscript described the activities as well as the atmosphere as where all ages were exploring, creating, and learning. That certainly was consistent with my own observations as the very best of children’s curiosity and inventiveness (including the unabashed curiosity and participation of dads and moms) was exploited and challenged. Lockheed Martin, the festival’s major sponsor, had a crowd surrounding eight remote-directed toy helicopters which played musical tunes on a variety of percussion instruments. The big *I* could have been the big corporate sponsors.

Bigness was there, but only succeeded because of the attention to the individual, to the small. In this sense, they had not lost track



Lego display, Mall of America, Bloomington, Minnesota

of *we* or *you* because, through hundreds of volunteers who lent a personal touch to what would otherwise have been abstract and impersonal, attention had also been applied to the individual child. *Attention* and *attentiveness*, the key to success in the human dimension, in making a difference, in reaching the heart. How well do *we* do this as teachers?

Another headline, from Manchester, NH, 26 April: 12,000 students from around the world (most U.S. states, Israel, Netherlands, Philippines, China, Mexico, Germany) converged in St. Louis for the annual FIRST Robotics Competition. FIRST [For Inspiration and Recognition of Science and Technology] was founded in 1989 by inventor Dean Kaman, “to transform our culture by creating a world where science and technology are celebrated and where young people dream of becoming science and technology leaders.” FIRST has three levels which span elementary through high school ages. This year’s high school competition involved a game of “aerial assist” where balls were caught and thrown over obstacles and into goals. An important part of this competition is that “alliances” can be formed between teams in order to assist and accomplish the goal of that particular competition. There are many rounds at the regional level which qualify a team for the Championship in St. Louis. Twenty thousand fans cheered on the winning alliance of teams from California, Michigan, and Texas. Awards by Virginia teams included: Engineering Inspiration Award, Team 384 from Richmond; Innovation in Control Award, Team 1885 from Haymarket; First Lego League (FLL) Innovation Solution Award, Team 6371, Great Falls; Junior FFL Synergy Award, Team 2398 from Henrico. Over 32,000 students on 3,000 teams participated in the 2013-14 season’s FIRST Tech Challenge.

Prior to St. Louis, over 68,000 students had formed 2727 teams in 17 countries to participate in regional competitions. At the ceremony in St. Louis, founder Kaman remarked: “This country celebrates sports and entertainers, but wealth is not created by these ventures, it is the result. It is a passion for science, technology, and innovation that [has] allowed these industries to prosper. Take what *you* have learned here and solve the world’s problems.”

Bigness was certainly there, but succeeded only because of attention to the small. My own school’s robotics Team 612 is a case in point. Some would find their performance unremarkable because, although they qualified and attended the St. Louis FIRST Championship, they won no award there. However, the team had traveled to Cleveland earlier for the Buckeye Regional and, though missing the Chairman’s Award, they won the Gracious Professionalism Award for the team’s reflecting the basic tenet of FIRST Robotics. Later, at the Greater DC Championship, they would submit for the Chairman’s Award, but having missed that honor, to their surprise and elation, they became winners of the Engineering Inspiration Award, qualifying for World’s in St. Louis plus a generous grant from NASA. In part, the inscription they earned read, “The Engineering Inspiration Award celebrates outstanding success in advancing respect and appreciation for engineering within a team’s school and community...this team has inspired us with their creative projects, events, and community outreach activities...invited to testify before Congress...cheering in the stands throughout this competition – and welcoming the out-of-town teams with gifts, hosting dinners, and helping out in the pit.” Our team has programming, electrical, mechanical, CAD, and outreach divisions. But smallness triumphed over bigness once again in the assistance they gave to other teams: helping another team with programming for coding problems, loaning spare motor controllers, providing software checks. It is in this sense that *we* and *you* had triumphed over *I*.

So, just how does someone go about “solving the world’s problems?”

In an article in the 29 July 2013 *New Yorker*, Atul Gawande, described some of the obstacles which advances in medicine have had to overcome before becoming accepted in mainstream health care. His main point, “We yearn for frictionless, technological solutions. But people talking to people is still the way that norms and standards change.” Not through edict, proclamation, regulation, or legislation, but through the power of personal touch. In our age of accelerating digital communication, *we* expect important innovations to spread quickly: Witness IT communications themselves, genomics, in vitro fertilization, breakthroughs in identification and conquest of pathogens causing a variety of diseases from HIV to Lyme disease. But why have other innovations failed to catch on, from Lister’s 19th Century pioneering work on asepsis, to modern day attempts to reduce death in childbirth and cholera in countries like India and Bangladesh where, for example, over 300,000 mothers and over 6,000,000 children die at time of birth? What to us seem like simple solutions (giving birth in hospitals, high tech incubators, intravenous injections in the case of fluid-retention in cholera



Robot 612 shooting toward the target.

Courtesy of Bryson Hicks

victims), simply end up ignored as most such equipment sits unused in store rooms.

What has worked in most, if not all, cases is simple one-on-one mentorship, village to village, house to house, person to person as persuasion (“Please do X.”) and compulsion (“*You* must do X.”) have been replaced by “X is what *we* do,” the establishment of a norm. In countries where threats or fines or suspensions of healthcare workers have led to birth attendants simply quitting, the BetterBirth Project has had remarkable success by having a cadre of child-birth-improvement workers visit hospital leaders and birth attendants. Showing villagers how to mix a simple sugar / salt solution to be taken orally by cholera victims has had remarkable success as well. One reason these approaches have met with success is because they are scalable, one-on-one and on-site mentoring. This seems messy and anachronistic to a Facebook and Twitter culture where *we* want videos for teachers and students, drones for troops, financial incentives to schools and teachers. Everett Rogers, an expert on how new ideas are communicated and spread, put it this way: “Diffusion is essentially a social process through which people talking to people spread an innovation.” That is where tweets and texting fail or, put another way, why one of the inventors of virtual-reality technology has written, “I fear that *we* are beginning to design ourselves to suit digital models of us, and *I* worry about a leaching of empathy and humanity in that process.” Professor of computer culture at MIT, Sherry Turkle, has written in her 2011 book, *Alone Together*, “These days, insecure in our relationships and anxious about intimacy, *we* look to technology for ways to be in relationships and protect ourselves from them at the same time.” Another take, by author, Stephen Marche, is how, by allowing us to avoid “the mess of human interaction,” Facebook may actually be making us lonely.

Are not teachers and teaching everywhere in this discussion as *we* meet daily in face-to-face encounters with our students? *We* seem at once, and paradoxically, enamored by bigness, yet most impressed by and devoted to our personal interactions on the small scale. Is it not, after all, the actions and interactions at the

smallest molecular and atomic levels what keep us alive – the simultaneously disquieting yet comforting revelation that there is a ten-fold greater abundance of microbial partners sheltered within our own bodies than cells which make us “us”? Or, is what I thought was “me” in reality an entire internal ecosystem?

In her foreword to a book, *Leading from Within*, former secretary of state, Madeleine Albright, comments with deep irony, “It is possible, of course, that *we* are all so busy using time-saving devices that *we* don’t have time to do anything meaningful.” What she remembers most amid all her travels, are not the meetings with high officials or heads of state in lavish offices, but those whom she met and talked with in refugee camps and rehabilitation centers in places like Sierra Leone, Haiti, Burundi or Bangladesh, where, amid overwhelming poverty or fear, she was impressed by an absence of anger or bitterness, and by volunteers “doing all they could to celebrate the gift of life.” She cautions against romanticizing poverty or attempting not to think about it. Instead, her witness is to reach out, person-to-person, like those tiny microbial creatures within us, working at the level of smallness in a culture that worships “BIG.”

Often *we* are told that big plans begin with small steps. Journalist Paul Salopek has begun a seven year walk to retrace the evolutionary journey of *Homo sapiens* from the Rift Valley in East Africa to the southern extremity of South America, the “Out of Eden Walk.” Why would anyone even contemplate a 21,000 mile odyssey at 3 miles per hour across 2500 generations of human history in the age of jet travel, astronauts, GPS and instant global communications? In his own words, “To relearn the contours of our planet...To slow down. To think. To write...I hope to repair

certain important connections burned through by artificial speed, by inattentiveness. I walk, as everyone does, to see what lies ahead. I walk to remember.”

Over two decades, movie director Steven Spielberg has filmed about 52,000 two-hour eyewitness experiences of holocaust [Shoah] survivors. Survivors unwilling to speak with their own children and grandchildren about the deeds and emotions of those dark days under Nazi repression have allowed the world to know their stories. Spielberg has been formatting them for online use, and commented to *USA Today*: “Just having an awareness of what discrimination and racial hatred can do [might motivate] people to be a part of stopping it from ever happening again.” The slaughter of 6 million Jews in the Shoah has been brought down to a personal size so that *we* and *you* replace the tyranny of *I*.

Adrienne Rich reminds us – especially those of us in our classrooms with our children and young adults – not to lose track of *we* and *you* in our loneliness along the fog-enshrouded shore as the dark birds of history scream and plunge, breaking our preoccupation with *I*.

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

Classroom-tested Arctic Climate Connections Curriculum Available for Free Download

The Arctic Climate Connections curriculum was developed for high school audience but is easily adaptable for middle school or lower college level.

The curriculum is classroom-tested, modular in design, data-rich, incorporates Google Earth and Excel as key tools, is based on authentic scientific data, uses active learning techniques, and includes hands-on activities. It is complete with assessments, answer keys, and a grading rubric. Classroom implementation showed that students were very engaged.

Download the curriculum. Also available is a recording of a presentation from the scientist who collected the data the curriculum is built on. Everything, including the presentation, is classroom-ready.

Curriculum:

<http://cires.colorado.edu/education/outreach/ICEE/arcticclimate/index.html>

Presentation:

<https://www.youtube.com/watch?v=0Mrb4GwZ8ME>

New National Climate Assessment Report Released Teaching Resources

The U.S. National Climate Assessment report was released last week. For those of you dedicated to informing the U.S. public, media, and policymakers about climate change research and information, communicating the findings of this report is a great way to contextualize and personalize climate change for your community.

National Climate Assessment: <http://nca2014.globalchange.gov/>
Teaching Resources: <http://www.climate.gov/teaching/2014-national-climate-assessment-resources-educators>



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



Teacher Summer Inservice Opportunities

Chesapeake Bay Foundation

Professional Development for K-12 Teachers

Chesapeake Bay Academy

June 23-27, 2014

This course is open to all educators. Special emphasis will be given to provide instructional resources that support the science standards related to watersheds and the Chesapeake Bay in sixth-grade science, Life Science, Earth Science, Biology, Environmental Science, and Oceanography. The Bay Academy will focus on the Virginia portion of the Chesapeake Bay and its watershed and will be held in Tappahannock, Virginia, and Port Isobel Education Center near Tangier Island, Virginia. Topics covered will include natural systems, water quality, and field investigations of Bay habitats (including wetlands, oyster reefs, and underwater grass meadows). Participants will engage in daily on-water investigations while learning how to lead a meaningful watershed educational experience with their students. **Length & Location:** 5 days total—residential – with 2 nights at St. Margaret's School, Tappahannock, Va., 2 nights at CBF's Port Isobel Island Study Center **Cost:** \$350 payable to CBF. Three optional Virginia Commonwealth University graduate credits in Life Science are available for an additional \$420 payable to St. Margaret's School on the first day of class. Registration information below.

Register For Either CBF class:

Online: <http://www.cbf.org/education-program/professional-development/summer-courses/July-md-registration>

Mail/fax: <http://www.cbf.org/documents.doc?id=590>

Questions? Please contact bportlock@cbf.org or call Bill Portlock, Instructor, at (804) 512-4536

Teachers on the Bay

July 7-11, 2014

This course is open to all teachers. This five-day residential course provides learning experiences for elementary, middle and high school teachers that are designed to closely support the VA Science Standards. Special emphasis is given to provide instructional resources that will support the standards related to watersheds and the Chesapeake Bay in sixth-grade science, Life Science, Earth Science, Biology, Environmental Science, and Oceanography. The course will provide instruction that integrates classroom and field teaching methods, and models meaningful watershed educational experiences. Printed materials and classroom resources supporting the content and skills in the science standards will also be included. Fieldwork will be on the tidal portion of the Rappahannock River and on Great Fox Island VA near the center of the Chesapeake Bay. Participants are eligible to receive up to 45 points for licensure renewal from VA school divisions or 3 Maryland Continuing Professional Development Credits. Participants also will have the option of earning 3 graduate credits from Virginia Commonwealth University at an additional cost to the participant. **Length & Location:** 5 days/4 nights—2 nights in St. Margaret's, 2 nights at CBF's Fox Island Education Center **Cost:** \$350 payable to CBF. Three optional Virginia Commonwealth University graduate credits in Life Science are available for an additional \$420. Tuition for VCU graduate credit is payable to St. Margaret's School on the first day of class.

Summer Opportunities for Earth Science Teachers

Eric J. Pyle, PhD

Professor, Department of Geology & Environmental Science
Coordinator, Science Teacher Preparation, College of
Science & Mathematics
VAST Region V Director

Middle and High School Earth science teachers:

1. The JMU Content Teaching Academies, along with the VDOE, is offering a special academy for the inclusion of special needs students in Earth science. Called ASSET, participants will engage in cooperative lesson development based on the learning needs and IEPs of case students in middle and high school. Participants will need to partner with a special education teacher at your school, with whom they would work during the follow-on period during the school year. Tuition for this academy is free. The only cost that you need incur, beyond transportation, would be the cost of a single room if you choose not to have a roommate and are staying on campus. Graduate credit will be available. This event runs June 23-27;
2. A somewhat related event is a two-week project development experience, focused on designing Earth science, using the Modeling Associations framework. Six Earth science teachers are invited to participate, and this opportunity includes a stipend. It will run two weeks, June 16-20 and June 23-27 (in conjunction with the CTA). Graduate credit should also be available for this activity, but participation is limited to the 40 or so partner school divisions. Please contact Eric Pyle for details and eligibility;
3. We have a small-scale project involving seven teachers and one university faculty member, working with some advanced teaching strategies using Google Earth. The time commitment is 5 days across the summer. A \$500 stipend and lunch each day is provided. The dates will be arranged with Steve Whitmeyer at JMU. This is a developmental project, based on an NSF grant for using Google Earth for undergraduate science teaching. More details about the overall project can be found at: <http://geode.net/about-us/>

Eric J. Pyle, PhD

Teacher Summer Inservice Opportunities

STEM Opportunity for School Districts

Announcing for 2014-15: Major (G5-14) STEM Opportunity for School Districts - Student Spaceflight Experiments Program -- Mission 7 to the International Space Station (The above subject line/title can hotlink to this URL: <http://ssep.ncesse.org>)

The National Center for Earth and Space Science Education, the Arthur C. Clarke Institute for Space Education, and NanoRacks announce Mission 7 to the International Space Station. This STEM education opportunity immerses grade 5-14 students across a community in an authentic, high visibility research experience, where student teams design and propose real microgravity experiments to fly in low Earth orbit on the International Space Station. The program nurtures ownership in learning, critical thinking, problem solving, navigation of an interdisciplinary landscape, and communication skills – all reflective of the Next Generation Science Standards, and reflective of the skills needed by professional scientists and engineers, and the skills desired by 21st century employers.

Each participating community will be provided a real microgravity research mini-laboratory capable of supporting a single experiment, and all launch services to fly it to Space Station in Spring 2015, and return is safely to Earth for student harvesting and analysis. A 9-week experiment design competition in each community, held September through November 2014, and engaging typically 300 students, allows student teams to design and formally propose real experiments vying for their community's reserved mini-lab on Space Station. A formal 2-step proposal review process, mirroring professional review, will determine the community's flight experiment. Content resources for teachers and students support foundational instruction on science in microgravity and experimental design. Additional programming leverages the experiment design competition to engage the community, embracing a Learning Community Model for STEM education. This includes a local art and design competition for a Mission Patch to accompany the flight experiment to Space Station. SSEP therefore provides for a community-wide STEM experience.

TIME CRITICAL: all interested communities are asked to inquire by May 30, 2014; schools and districts need to assess interest with their staff and, if appropriate, move forward with an Implementation Plan. Communities must be aboard by September 3, 2014, for a 9-week experiment design phase September 8 to November 7, 2014, and flight experiment selection by December 17, 2014. Flight of the selected experiment to ISS is expected in Spring 2015.

Contact: Dr. Jeff Goldstein, SSEP Program Director;
301-395-0770;
jeffgoldstein@ncesse.org

2014 UVA – JLab Light & Optics Summer Program

July 28 – August 8, 2014

Virginia physical science teachers of grades 6-8 are invited to apply for a two-week summer professional development workshop at The Thomas Jefferson National Accelerator Facility in Newport News, Virginia, with fall follow up. This is a collaboration between the University of Virginia (UVA) and Jefferson Lab (JLab). The summer workshop will be taught by Physics and Science Education faculty from UVA and staff from the Science Education group at Jefferson Lab.

Teachers will earn 3 graduate credits after 1) submitting tuition payment to the University of Virginia and 2) completing all course requirements.

This program is sponsored by a Math Science Partnership grant from the Virginia Department of Education. Sixteen applicants will be accepted into the program.

Program Highlights

- Attend a ten-day summer workshop at Jefferson Lab in Newport News, Virginia.
- Receive a stipend of \$1000 when all activities associated with the 10-day summer workshop have been successfully completed (approximately September 2014) and \$500 when all data collection activities during the academic year have been completed (approximately June 2015), for a total stipend of \$1500.
- Receive an optics lab kit with optical bench with lenses, mirrors, filters, laser pointer, etc., to complete over 50 hands-on activities when supplemented with inexpensive materials from home.
- Receive free registration for the VAST PDI in Roanoke, Virginia (November 19-22, 2014).

Deadline for applications is May 23, 2014

For more information, please visit:

<http://education.jlab.org/optics/>

or contact Christine Wheeler at wheelerc@jlab.org

Be An Active VAST Member!

How can you be more involved in VAST? Why not contact one of the Directors and ask if you could serve on a committee that matches your interests.

<http://www.vast.org/board-information.html>

As you scroll down the VAST Board page on the web, you will find the Regional Directors. Contact the one who leads in the area where you live and/or teach. The emails are listed and they would love to make contact with you.

If you would prefer to work towards your curriculum level or subject area, you will find these Directors listed also with their emails. We are looking for new ideas and more ways to increase communication, expertise and experience. You may be just the expert we need to move VAST forward. We promise you will find your efforts valued.

Teacher Resources:

Inviting 4th - 6th Learn and Share Across Borders!



<http://www.riverxchange.com>

RiverXchange is a year-long water resources education program for 4th - 6th graders that integrates science, social studies, and 21st-Century skills through online wiki, pen-pal partnerships. All lessons are correlated to Common Core Standards! Our hands-on curriculum is easy to implement; we offer support to help teachers set up field trips and train everyone on how to best utilize the tools of the program.

This year we will be focusing on supporting teachers on how to best select and integrate from the RiverXchange curriculum so students can share the projects of their classrooms.

Please call Carolyn Gregory for more information and any questions you may have:
(505) 450-5671 or email carolyn@riverxchange.com

Consortium for Ocean Leadership Student Contest

Our 2014 J-aRt Competition is now officially open! Encourage your students to submit their own original artworks on Styrofoam cups, for the chance to have them sent down to the seafloor! Winning cups will be subjected to extreme pressure and compress, brought to the surface and returned to students winners.

<http://joidesresolution.org/node/3596>

<http://www.joidesresolution.org>



NASA Climate Bingo!

Spice up your next car ride or bus trip! In this game you will be on the lookout for things that are good for our climate and environment and things for things that can sometimes hurt them. Our bingo generator creates a unique card for each player. You can learn all about the different items on our website:

<http://climatekids.nasa.gov/bingo>

<http://climatekids.nasa.gov/>

From Our Nationally Recognized Classrooms to Her Own.

Just four years after receiving her master's degree from Regent University, 4th grade teacher LaKeshia Ames was named one of the nation's top educators for 2012. She's the only teacher in Virginia to receive the prestigious National Milken Educator Award. Regent is preparing a new generation of leaders in education and administration—men and women who model a higher standard of excellence in schools nationwide. Discover how Regent's School of Education—recognized for its top online programs by *U.S. News & World Report*, 2013—can help you succeed.

M.Ed. in Educational Leadership
M.Ed. in Curriculum & Instruction

Online | On Campus
888.713.1595 | regent.edu/vast



**REGENT
UNIVERSITY**

School of Education

Christian Leadership to Change the World

LaKeshia Ames, M.Ed. '08
Churchland Primary & Intermediate
2012 National Milken Educator Award

EDU130753

Applications Open Now for Middle/High School Science Teachers

Are you a new science teacher just finishing up your first year in the classroom, or do you have any new teachers in your school? If so, new teachers can apply now to VISTA's secondary teacher program, specifically designed to support early-career teachers. To learn more, watch this video. Current first-year teachers are encouraged to sign up by Fri., May 30 or Fri., July 18. Teachers hired in the summer can apply as late as Fri., August 22.

Calling all Bloggers!

Do you like to blog? VISTA just launched a new website with a blog featuring the latest in science and education issues! If you would like to be an inspiration to other science educators, then you should consider becoming a guest blogger for VISTA. We are looking for people who want to share their experiences with science education to write for us. Both professional bloggers and novices are welcome! We are also looking for people who would like to share one-time experiences such as grants won or conferences attended. If you are interested, contact Dannelle Shugart via email, Facebook (facebook.com/vistascience) or Twitter (twitter.com/vistascience). She will happily provide more information to get you started!



Teachers Bring Science to Life with Problem-Based Learning Units

All year, VISTA elementary teachers across Virginia have been using problem-based learning (PBL) units to bring science to life for their students. Rather than reading from textbooks, they've been conducting experiments and working to solve real-life problems, all while still covering the core science content required by the state. Here is sampling of units they've completed this year:

- Becoming "museum curators" for a living organism exhibit in the school, setting up habitats and an interpretive display for algae, ancharis, daphnia, duckweed, snails, guppies,



At Bellwood Elementary in Chesterfield County, students are doing science with the help of a baby loggerhead turtle they raised money to adopt.

VISTA Teacher In the News

Kimberly Bender's class at Bellwood Elementary in Chesterfield County was covered in a news story by John Ramsey at the Richmond Times-Dispatch. Kimberly, who attended the VISTA Elementary Science Institute at Virginia Commonwealth University last summer, led a project about the Chesapeake watershed in which her class raised money to adopt a loggerhead turtle hatchling. On April 11, the class traveled to the Virginia Aquarium to visit their baby turtle, Aqua. Bender was also just named Teacher of the Year for her school!

and fire belly newts. (Kimberly Sasser, Grade 3, OB Gates Elementary)

- Helping restore the sea turtle population on Virginia's beaches (Laura Hansen, Grade 5, Nottingham Elementary School)
- Helping musicians at Busch Gardens whose instruments had been ruined with water damage to create new instruments (Corrine Wolfe-Cornwell, Windsor Oaks Elementary)

Elementary teachers attend a four-week summer institute and then receive coaching support to help them implement innovative teaching approaches in their classrooms throughout the year. Congratulations to all the VISTA teachers on a great year!

VAST Board 2014

2014 VAST Board of Directors

<i>President</i>	Shirley Sypolt
<i>President Elect</i>	Jenny Sue Flannagan
<i>Immediate Past President</i>	Brita Hampton
<i>Vice President</i>	Julian Barnes
<i>Secretary</i>	Celeste Paynter
<i>Treasurer</i>	Jimmy Johnson
<i>Treasurer Assistant</i>	Melissa Brichacek
<i>Director, Region I</i>	Kim Dye
<i>Director, Region II</i>	Adrienne Sawyer
<i>Director, Region III</i>	Sherrie Roland and Leslie Lausten
<i>Director, Region IV</i>	Susan Bardenhagen
<i>Director, Region V</i>	Eric Pyle
<i>Director, Region VI</i>	Sonya Wolen
<i>Director, Region VII</i>	Diane Tomlinson
<i>Director, Region VIII</i>	Pam Aerni

Chairs of Standing Committees

<i>Awards & Grants</i>	Tim Couillard	<i>Advocacy</i>	Delores Dunn, Juanita Jo Matkins
<i>Biology</i>	Kathy Frame	<i>Chemistry</i>	Jill Barker
<i>College & Universities</i>	Suzanne M. Donnelly	<i>Communication</i>	Jenny Sue Flannagan
<i>Earth Science</i>	Eric Pyle	<i>Elementary</i>	Michele Lombard, Jean Harper Neely
<i>Environmental Literacy</i>	Cindy Duncan	<i>Informal Learning</i>	Charles English
<i>Membership</i>	Barbara Adcock	<i>Middle</i>	Bonnie Murray
<i>Nominations</i>	Brita Hampton	<i>Policy</i>	George Dewey
<i>PDI Chair</i>	John Kowalski	<i>Physics</i>	Tony Wayne
<i>Teacher Resources</i>	Mary Strother	<i>Outreach & Professional Concerns</i>	Juanita Jo Matkins
<i>Technology</i>	Paula Leach		

Board-Appointed Positions

<i>Newsletter Editor</i>	M. Jean Foss	<i>Web Administrator</i>	Dennis Casey
<i>Parliamentarian</i>	Andy Jackson	<i>Math/Science Coalition</i>	Delores Dalton Dunn
<i>Science Matters Coor.</i>	Robin Curtis	<i>NSTA Congress Rep.</i>	Shirley Sypolt, Jenny Sue Flannagan
<i>Journal Managing Ed.</i>	Anne Mannarino	<i>VETAC Rep</i>	Paula Leech
<i>VAST Executive Director</i>	Susan Booth	<i>Assistant Treasurer</i>	Melissa Brichacek

Representatives to VAST Board

<i>VJAS</i>	Julia Cothron	<i>VIP</i>	Jeff Steele
<i>DOE - Secondary Sci.</i>	Eric Rhoades	<i>VRUEC</i>	Stephanie DeNicola
<i>DOE - Elementary Sci.</i>	Barbara Young	<i>VSELA</i>	Jean Young
<i>NSTA District VIII Dir.</i>	David Helm	<i>VESTA</i>	Gale Bartley
<i>PAEMST</i>	Elizabeth Miller	<i>VCEC</i>	Jean Harper Neely



“Working Together to Promote Quality Science Education”

Many thanks for the support of science education by our Corporate Benefactors and Corporate Members.

VAST Benefactors



Delta Education
80 Northwest Boulevard
Nashua, NH 03063
www.delta-education.com

Science Museum of Virginia
2500 West Broad Street
Richmond, VA 23220
www.smv.org



Jefferson Lab
628 Hofstadter Road, Suite 6
Newport News, VA 23606
www.education.jlab.org

Virginia Naturally
Dept of Environmental Quality
PO Box 1105
Richmond, VA 23220
www.VaNaturally.com



Vernier Software & Technology
13979 SW Millikan Way
Beaverton, OR 97005
www.vernier.com



VAST Corporate Members

Associated Microscope
P.O. Box 1076
Elon, NC 27244
www.associatedmicroscope.com

CPO Science
P.O. Box 3000
Nashua, NH 03061
www.cpo.com

PASCO Scientific
10101 Foothills Blvd.
Roseville, CA 95747
www.pasco.com

Biome in A Box
4401 Wind River Run
Williamsburg, VA 23188
www.biomeinabox.com

Flinn Scientific Inc.
P.O. Box 219
Batavia, IL 60510
www.flinnsci.com

Regent University
1000 Regent University Drive
Virginia Beach, VA 23464
www.regent.edu

BioRad Laboratories
2000 Alfred Nebel Drive
Hercules CA 94547
www.bio-rad.com/

Fisher Science Education
Part of Thermo Fisher Scientific
1523 W Philadelphia St. Fl 2
York, PA 17404
www.fisheredu.com

Teacher Canvas, LLC
P.O. Box 7682
Hampton, VA 23666
www.teachercanvas.com

Bowman Environmental Services, LLC
3170 Beaumont Farm Road
Charlottesville, VA 22901
BowEnvSer@embarqmail.com

Five Ponds Press
477 South Rosemary Ave, Suite 202
www.fivepondspress.com
West Palm Beach, FL 33401

Virginia Junior Academy of Science
2500 W. Broad Street
Richmond, VA 23223
www.vjas.org

Busch Gardens/
Water Country in USA
One Busch Gardens Blvd.
Williamsburg, VA 23187-8785
www.buschgardens.com
www.buschgardens.org

Lab-Aids, Inc.
17 Colt Court
Ronkonkoma, NY 11779
www.lab-aids.com

Virginia Space Grant Consortium
600 Butler Farm Rd. S-200
Hampton, VA 23666
www.vsgc.odu.edu



Question your world.



www.smv.org

Special thanks to our
premier partners:

HealthDiagnosticLaboratoryInc.

Virginia529
College Savings Plan

2013 VAST Leadership



President

Shirley Sybolt
757-826-3573
president@vast.org

Immediate Past President

Brita Hampton
757-269-7633
past.president@vast.org

President-Elect

Dr. Jenny Sue Flannagan
757-531-5057
president.elect@vast.org

Vice President

Julian Barnes
540-562-3900
vice.president@vast.org

Secretary

Celeste Paynter
434-447-3030
secretary@vast.org

Treasurer

Jimmy Johnson
804-752-7727
treasurer@vast.org

Editor Science Educator

Jean Foss
434-973-3709
newsletter@vast.org

Executive Director

Susan Booth
(757)-874-3349
Fax (757)-874-3349
executive.director@vast.org

Is Your Address Changing?

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

VAST Regional Directors:

Director, Region 1, Kim Dye
804-798-6762
region1@vast.org

Director, Region 2, Adrienne Sawyer
757-546-9776
region2@vast.org

Director, Region 3, Sherrie Roland and Leslie Lausten
region3@vast.org

Director, Region 4, Susan Bardenhagen
703-338-9589
region4@vast.org

Director, Region 5, Eric Pyle
540-574-0483
region5@vast.org

Director, Region 6, Sonya Wolen
434-791-5160
region6@vast.org

Director, Region 7, Diane Tomlinson
276-889-4421
region7@vast.org

Director, Region 8, Pam Aerni
region8@vast.org

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:

VAST Membership Form
VAST Nominating Form

VAST Advertising Form
VAST Corporate Membership Form

MINI-GRANT FORMS :

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

Next Deadline for *The Science Educator* for

articles, letters to the editor, or labs is:

Aug. 1, 2014.

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