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

The Science Educator

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Virginia Science Standards Receive High Praise

"If America is to remain a prosperous, scientifically-advanced and economically competitive nation, then we must ensure that every school is teaching science to a very high standard," said Chester E. Finn, Jr., Fordham's president.

In this difficult economy when budgets are being cut and teacher hiring and retention practices are being scrutinized, the Virginia State Science Standards are being described as "among the best in the nation", according to the January Fordham report. The Thomas B. Fordham Institute promotes excellence in education by "quality research, analysis, and commentary". The report states that the Virginia standards are "among the few that [they] would cheerfully recommend as models for other states". The Institute gave the state's 2010 Science Standards of Learning (SOL) a grade of "A-" for content and rigor. More than 75 percent of states received C, D or F.

Two years ago Virginia's Board of Education revised the Science Standards to "provide students with a solid foundation in the STEM studies essential for success in high-demand, high-wage and high-skill 21st-century

careers" according to Superintendent of Public Instruction Patricia I. Wright.

However, strong standards do not help students if they are not taught. There are concerns that a bill (SB 185) making its way through the General Assembly will discourage elementary school teachers from teaching science. This bill would eliminate the third-grade SOL exams in science and social studies. Proponents want to give students more time to focus on math and reading.

[Last Action on SB 185: Tabled in Rules unanimously on Feb. 21]

Virginia's science educators have earned the right to be proud of their accomplishments, but need to be vigilant and to guard against complacency and the tendency to lose the progress we have made. Let us all become more informed and worked together in our classrooms, schools, districts, universities and colleges, and state to achieve excellence.

(References located on page 3)

PDI Celebrates 60 Years of VAST

Can you believe that VAST is 60 years of age?! It's true! We are planning a wonderful celebration at this year's PDI . . . so now is the time to start making plans to join us at the **Williamsburg Hotel, November 7-10, 2012.**

Our Theme is:

Designing Your Way Through Science

Come and share the ways that you have navigated through your curriculum and designed lessons that got the information across to your students. Designing your way through science looks different in so many ways . . . **show us how you do it!**

The Presentation Proposal form is available on our website, www.vast.org. Give it a look and think about what units, activities, lessons, and projects you would like to share with other teachers.

We can't do this celebration or PDI without you!

Looking forward to seeing your proposal soon!

Brita Hampton - President Elect, PDI Chair



The Williamsburg Hotel is the site of the 2012 VAST PDI. VAST was last in Williamsburg in 2007 when Jamestown was celebrating its 400th anniversary.

Register early for your hotel room and be in the middle of the action this year! See page 5 more information.



From the Executive Director:

I want to thank you all for an enlightening visit to the General Assembly...I wanted to let you know a condensed version of what I said with the assistance of others.

Science is proven to motivate students, but more importantly it builds academic vocabulary and concepts, improves reading comprehension and writing achievement. Science, Social Studies, the Arts...these are the goals of education. Reading, writing, speaking, listening, and mathematics are the tools to help students achieve the content goals. Together they mutually benefit the other. Exemplary science programs build science concepts over the years, like the Standards of Learning, through developmentally appropriate investigation and study.

Accountability for elementary science instruction is and should be a shared responsibility among all K-5 classroom educators, otherwise science education will fall solely on the shoulders of fifth grade teachers. Imagine being that educator, trying to make sure students have learned all K-5 standards of learning in science in one year. Science will be reduced to a test prep book and memorizing words and definitions.

Virginia is one of the leaders in Science Achievement on the National Assessment of Education Progress. We are proud as the Virginia Association of Science Teachers that effective science education leads in supporting reading and math improvement as a logical learning progression in the sequence of real-world learning. Thank you for being a part of the process!

Special thanks to Kip Bisignano of School Specialty

Susan Booth

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Elementary Science Education at the Crossroads

By the time you get this issue of the VAST newsletter the Virginia Legislature may have made its final decision on Senate Bill 185. If the bill is passed and signed by Governor McDonnell, science and social studies SOL testing will be eliminated in third grade. As a member, you have received several emails updating you on the legislative process, and asking you to contact your delegate. It has been an interesting ride for me. This is the first time I have taken on a legislative issue to the point I've visited the General Assembly and met with senators and delegates, as well as contacting the Secretary of Education! If the bill failed, we should celebrate, yet our job is not done. As VAST, our mission (yours and mine) is "the nurturing and advancement of superior science education", and elementary science education is the foundation of superior science education.

Many of you know that I was a first grade teacher long before I was a secondary science teacher. My belief in the importance of elementary science education began with my own experiences with elementary science. I have long believed that elementary science is an under-developed, under-utilized resource for developing all those skills the national reform documents cry for: critical thinking, problem solving, and self-motivated learning. Well-delivered instruction in elementary science is also a vehicle for meeting the needs of diverse learners and closing the achievement gap, as I saw most recently in a STEM project in the Tidewater area. VAST's most recent Position Statement, "The Importance of Elementary Science" (<http://www.vast.org>) eloquently describes the benefits of science in the elementary

grades and also the conditions needed to achieve those benefits. Even if Senate Bill 185 failed, we still need to look at the conditions laid out in the VAST Position Statement. The very first condition is "Time for an inquiry science program provided for every student on a daily basis".

If you have spent any time in an elementary school for the past five years, you know that elementary teachers and principals are feeling the pressures of standardized testing and one of the responses has been to narrow the curriculum, spending less and less time on science and social studies. This narrowing will not end if Senate Bill 185 fails. The reason for the continuation of narrowing lies not only with testing pressures, but also with the Virginia Standards of Accreditation Regulations.

The Virginia Standards of Accreditation regulations, approved August 31, 2011, stipulate, "To provide students with sufficient opportunity to learn, a minimum of 75% of the annual instructional time of 990 hours shall be given to instruction in the disciplines of English, mathematics, science, and history/social science." That's 990 hours TOTAL for all core content areas. There is NO breakdown by content, and this is where the problem lies. School districts and schools can work within the regulations and divide the 990 hours however they choose. In some cases, that might even mean 990 hours devoted solely to mathematics and English (language arts and reading). We know that science is not currently taught in some elementary grades in some schools in Virginia, we also hear from our members that less and less science is being taught in all elementary grades not subject to Virginia SOL tests. I believe VAST needs to address this issue, and consider engaging the State Board of Education and the Virginia Department of Education in an effort to enact regulations to establish a minimum time spent daily on elementary science instruction.

Your Regional Director will be an important voice in the conversation about VAST's next steps regarding Senate Bill 185 and the allocation of the 990 hours in the Standards of Accreditation. Look for more on this in upcoming months. VAST is taking its mission seriously. We want you to be able to do the very best job you can do, and we want the best for the children of Virginia.

References for Page 1:

State of the States Science Standards 2012, Thomas B. Fordham Institute <http://www.edexcellencemedia.net/publications/2012/2012-State-of-State-Science-Standards/2012-State-of-State-Science-Standards-FINAL.pdf> (Search for Virginia)

Va. has strong science standards, but may lose third-grade science test By Emma Brown http://www.washingtonpost.com/blogs/virginia-schools-insider/post/va-has-strong-science-standards-but-may-lose-third-grade-science-test/2012/01/31/gIQADwj3eQ_blog.html



This is an example of the experiences we want for our children: Elementary students designing a reef ball for encouraging oyster growth – to help filter pollutants from the Chesapeake Bay. Photo - Krista Root

Engage your students with our STEM Resources!



STEM Classroom Libraries for K-8

Breakthrough Inventions Library, grades 3-5

Inventors' biographies, stimulating facts and historical photographs engage students. Inventing the Automobile, Inventing the Camera, Inventing the Computer, Inventing the Electric Light, Inventing the Printing Press, Inventing the Radio, Inventing the Telephone and Inventing the Television.

8 books, 32 pages, paperback #1015143 \$71.60

My Science Investigations, grades 2-4

Learn the scientific method while engaging in fun, exciting experiments! Titles include: *Experiments with Liquids*; *Experiments with Magnets and Metals*; *Experiments with Plants*; *Experiments with Rocks*; *Experiments with Soil*.

5 books, 32 pages each, paperback #1392524 \$47.94

Interactive Whiteboard Resources, K-8



Delta Education has interactive whiteboard resources to help you incorporate instructional technology into your science lessons. Our interactive whiteboard resources help students grasp key science concepts, conduct virtual labs, perform simulations and read about science at their own pace. Visit the STEM Technology section of the Delta Education website.

Visit www.deltaeducation.com to view more classroom libraries and technology resources to bring STEM to your classrooms and students!

STEM Schools and Extended Learning Programs

Delta Education can help you select resources and create an Elementary STEM School or Extended Learning program. Delta carries a vast array of inquiry-based science kits, like **Models and Designs and Flight and Rocketry**, interactive whiteboard and instructional technology resources, and informational text materials. Contact one of your Delta Education Sales Representatives to see what we can do for you and your students!

Kip Bisignano, M.Ed., NBCT

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Kip.bisignano@schoolspecialty.com

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800-338-5270 ext. 528

Delta Education is a proud sponsor of the Virginia Association of Science Teachers Professional Development Institute and is the recipient of the 2011 Outstanding Service to Virginia Science Education Award.

www.deltaeducation.com

Help Us Celebrate 60 Years of VAST at This Years PDI!

Can you believe that VAST is 60 years of age?! It's true! We are planning a wonderful celebration at this year's PDI . . . so now is the time to start making plans to join us!

We will be at the Williamsburg Marriott, from 7 – 10 November 2012.

Our Theme is: **Designing Your Way Through Science.**

Register Early for Your PDI Hotel Room

VAST 2012 PDI @ Williamsburg Hotel November 7-10, 2012

VAST 2012 PDI Hotel Accommodations :

The following is a listing of the rate information and the link for booking a room.

Single/Double Rate: \$94 per night plus 10% tax and occupancy rate \$2.00

Rate is available for three days before and after the PDI

Complimentary Parking

In-room internet discounted to \$4.95 per night

Group rate cut-off date: October 17, 2012

www.thewilliamsburghotelcc.com

As a reminder, please be certain to secure your room for the VAST PDI 2012. The advantages are many: You will spend more time learning, networking, and socializing and less time commuting and you will be assured the VAST group rate.

Williamsburg Hotel, 50 Kingsmill Rd.

Williamsburg VA 23185

Special Note: The Williamsburg Marriott has changed its name from the Williamsburg Marriott, but not its great service, hotel accommodations and VAST Contract. The hotel is working on their codes to develop web links for reservations, but it could be another month or so before it's ready. Check on the VAST website for updates.

Link to the VAST Website for Up-to-date PDI Information

VAST Website: [http:// www.vast.org](http://www.vast.org)

Presenter Proposal: http://education.jlab.org/vast/presentation_proposal.php

VAST PDI (Under construction) <http://www.vast.org/annual-pdi.html>

VAST Membership Form: <http://www.vast.org/membershipform.html>

Exhibitors please contact Susan at: susan.science@gmail.com



Are you a 6th-12th grade science teacher (provisional or fully licensed) in your first year of teaching full-time right now? Or an early career science coordinator? Or a college/university faculty member who teaches science methods courses?

If you can answer yes to any of these.....then apply for VISTA!!!

Led by George Mason University, the Virginia Initiative for Science Teaching and Achievement (VISTA) is a partnership among 47 school districts, six universities, and the Virginia Department of Education to build an infrastructure to provide sustained, intensive science teacher professional development and educational research in order to increase student performance. Depending on the program, participants receive a stipend, course tuition, VAST or VSELA conference attendance, and/or classroom materials.

Please go to <http://vista.gmu.edu> for more information and to apply today!

This content was developed under a grant from the U.S. Department of Education, Investing in Innovation (i3) Program. However, they do not necessarily represent the policy of the U.S. Department of Education, and you should not assume endorsement by the Federal government.



Virginia Junior Academy of Science

2011 – 2012 is a Year of Change

As reported in the last Science Educator, the Virginia Junior Academy of Science will reorganize its science competition into into separate Middle School and High School Categories. This competition in May will be renamed the VJAS Research Symposium to more accurately reflect its scope and significance. The “annual meeting” of the Junior Academy will be held during the symposium to elect student officers.

Revised Handbook. The Handbook has been revised to include the above as well as to incorporate a number of other changes.

Redesigned Website at <http://www.vjas.org>. The complete Handbook and Appendix can be easily downloaded from the website which is now more user friendly. You will also find helpful sections for teachers and students with suggestions and links to all the forms and information you will need.

The VJAS Research Symposium will be held at Norfolk State University, May 22-24, 2012. Students arrive on Tuesday afternoon, present their papers on Wednesday and then enjoy a “Dinner with the Scientists.” The evenings feature speakers, the annual meeting to elect student officers and a dance. The Awards Ceremony is on Thursday. Check the VJAS website for detailed

information: <http://www.vjas.org>. If you’ve never been to a meeting consider coming this year and experience the very best in student research throughout Virginia.

If you are coming, plan to get the most out of the symposium. Consider the following.

*Get all the information you need on the website, and make sure you meet the **April 25 deadline**.*

- Apply to be a Junior Academy Officer.
- Apply for a Special Interest Award or Honorary Membership in AAAS and VAS. Look over all of the special awards available for award winning papers.
- Nominate a teacher or colleague for the **E. C. L. Miller Science Teacher of the Year award**. This is given to the most outstanding teacher nominated each year. The prize is membership in VAST a trip to the next Virginia Association of Science Teachers (VAST) Conference/Professional Development Institute with paid expenses for registration and hotel.

We need your help. If you have some time to devote to our young scientists and want to consider judging, contact Susan Booth (Susan.Science@gmail.com).

Discovery Education K-8 Science Techbook Comes to Virginia

New digital instructional resource meets the needs of diverse learners and improves student engagement and achievement.

The Discovery Education K-8 Science Techbook is a core, digital instructional resource that captures the attention of today's tech-savvy students. Now available to Virginia science teachers for grades K-8, the Science Techbook provides dynamic and engaging resources that support the 5E model of instruction (engage, explore, explain, extend and evaluate) while meeting the Virginia Science Standards of Learning.

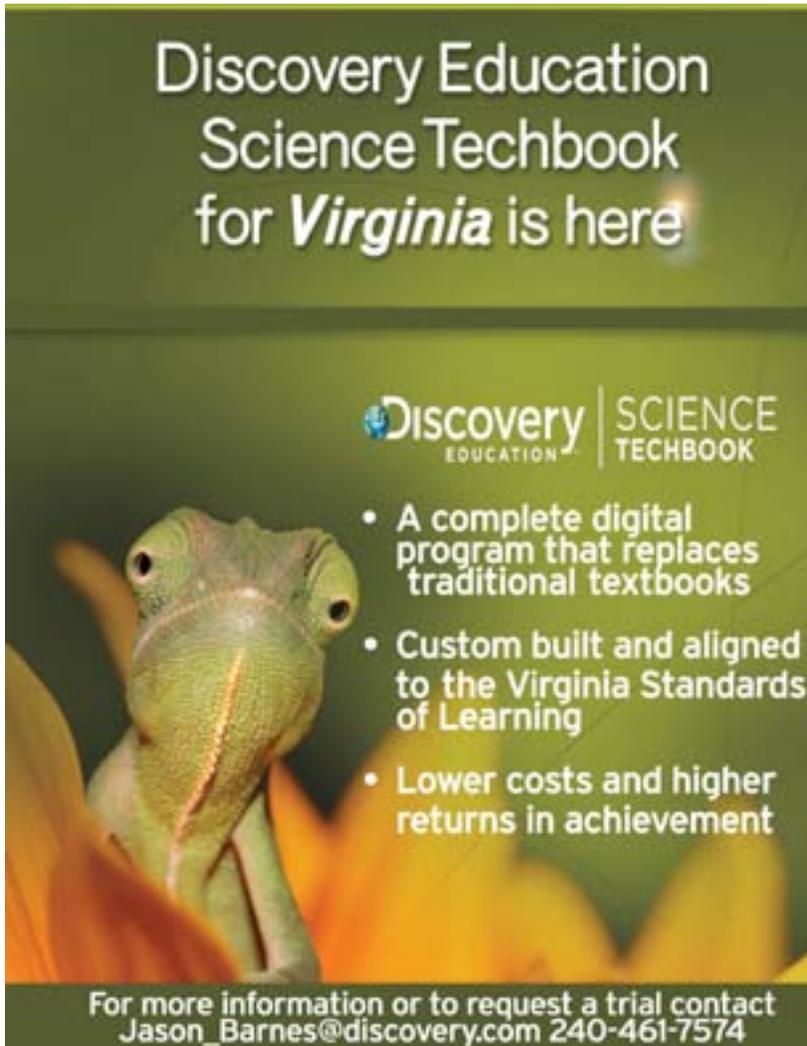
“The Discovery Education Science Techbook brings the world of Discovery into classrooms and provides teachers and students interactive features and up-to-the-minute resources that a traditional textbook can't deliver,” said Jason Barnes of Discovery Education. “We are excited to offer the Science Techbook as instructional resource for Virginia teachers.”

The Science Techbook presents dynamic content and interactive resources allowing students to access the curriculum in their specific

learning style. Whether students are visual, auditory, read/write, or kinesthetic learners, the Science Techbook captures their attention through virtual labs, video clips, audio ebook and reading passages, an interactive glossary and more. Updated in real-time, it also provides teachers the opportunity to incorporate up-to-date scientific issues into their curriculum as they play out in the world. Additionally, the Science

Techbook addresses every type of learning modality and includes a real-time assessment component that measures students' progress and recommends individualized resources that reinforce classroom instruction.

The service includes a variety of teacher resources, such as “5 minute preps,” model lessons and full days of custom, in-person professional development. It is a substantially less expensive option per student than traditional textbooks.

A promotional graphic for the Discovery Education Science Techbook for Virginia. The background is a green and yellow gradient with a close-up image of a green tree frog on a yellow flower. The text is white and green. At the top, it says "Discovery Education Science Techbook for Virginia is here". Below that is the logo "Discovery EDUCATION | SCIENCE TECHBOOK". A bulleted list highlights three features: "A complete digital program that replaces traditional textbooks", "Custom built and aligned to the Virginia Standards of Learning", and "Lower costs and higher returns in achievement". At the bottom, it provides contact information: "For more information or to request a trial contact Jason_Barnes@discovery.com 240-461-7574".

Discovery Education Science Techbook for *Virginia* is here

Discovery EDUCATION | SCIENCE TECHBOOK

- A complete digital program that replaces traditional textbooks
- Custom built and aligned to the Virginia Standards of Learning
- Lower costs and higher returns in achievement

For more information or to request a trial contact Jason_Barnes@discovery.com 240-461-7574

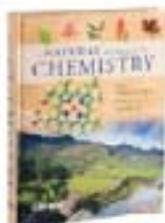
www.discoveryeducation.com/sciencetechbook

New High School Chemistry & Biology Programs



Are You Looking For A New High School Biology or Chemistry Program?

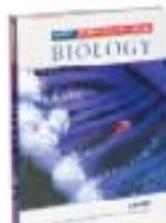
LAB-AIDS introduces two rigorous and relevant high school programs designed to help your students understand key scientific concepts and engage them in learning...



A Natural Approach to Chemistry A Greener Chemistry!

A Natural Approach to Chemistry makes chemistry a subject in which all students can succeed!

- The program addresses Chemistry in a context relevant to student's daily lives.
- The 5E Learning Cycle is the underlying pedagogical foundation of the program.
- The complete Learning System includes a student book, lab manual, teacher ancillaries, and our patented LAB Master® System used in 58 real Chemistry investigations.
- No hazardous or toxic chemicals are used.



Science & Global Issues: Biology Issues-Based & Relevant!

3-PLP-developed Science and Global Issues: Biology makes biology come alive in your classroom!

- Units explore topics such as human impact on ecosystems, world health, genetically modified organisms, and biodiversity.
- Students are challenged to reason scientifically while applying their understanding of concepts in each unit.
- Each unit immerses the students in an issue that provides a realistic context that relates science to sustainability.
- Students propose a course of action, citing scientific evidence to support their proposal and addressing the trade-offs associated with their proposal.

For more information contact your Virginia Manager Amy Kazman (704) 841-0962. Email: akazman@lab-aids.com

LAB-AIDS.com



Project CRESST – Engaging Your Students in Research Donna Forester, Lisa Abrams, and Patty Slattum

“I liked the information from the direct sources, such as the people doing the work in that field, the hands on labs that we learned to do, and seeing the labs in person. I appreciate having all of the copies of everything we did on the wiki.”
– 2011 CRESST Academy Participant

“I have new ideas and perspectives to use when teaching about research and the nature of science that the students might be more connected to and interested in.” – 2011 CRESST Academy Participant

Last July, 11 middle and high school science teachers from central Virginia spent a week with researchers and faculty from the Schools of Education and Pharmacy, Virginia Commonwealth University’s (VCU) Center for Clinical and Translational Research (CCTR), the Teaching, Encouraging, Exercise, Nutrition and Support (TEENS) Healthy Weight Management program exploring scientific and ethical issues related to human-based research. Teachers learned first-hand, what it is like to be a research participant and how research can have a powerful impact on science, health and fitness education for both students and adults. Members of the CRESST curriculum development team and faculty and staff from the VCU Schools of Education and Pharmacy facilitated inquiry-based investigations and content discussions drawn from the CRESST curriculum.

During the week-long Academy, teachers learned about the science childhood health and wellness and how to apply some of these concepts in their classrooms by using the CRESST curriculum. The lessons were developed by a team of exemplary middle and high school science teachers and were reviewed by university faculty with expertise in childhood health and wellness. The goal was to provide secondary science teachers with information-rich high-quality curricular materials that foster an inquiry-based approach to instruction to build students’ research literacy skills. The curriculum is aligned to the Virginia Standards of Learning and the National Science Standards and is organized into four main areas intended to mirror the steps a research would take when designing and conducting a research study. The key topics include:

- Foundations of the Research Process
- Gathering and Synthesizing Information
- Ethical Considerations when Conducting Research with Human Subjects
- Measurement and Statistics: Collecting Data and Analyzing Results

The project is supported by the National Center for Research Resources and the Division of Program Coordination, Planning, and Strategic Initiatives of the National Institutes of Health through Grant Number R25 0D010984-03 which allows VCU to offer this intensive

week-long Academy at no charge to teachers or school divisions. As part of the Academy, each teacher receives a personalized “lab in a bag” to support their classroom use of the CRESST curriculum for the school year.

Ms. Donna Forester, a life science teacher at Tuckahoe Middle School in Henrico County Public Schools, described her experience in the Academy and how her participation has inspired her instruction. She writes:

The CRESST Academy gave me exposure to the inner workings and ethical considerations of a clinical trial, from the inception of the idea, ethical review and approval, introduction to the community, and resulting data from the study participants. The knowledge I gained was invaluable in providing my students with a basic understanding of what a vital role they can potentially play, now and in the future, in the shaping research to benefit society as a whole.

I have found it essential to incorporate the application of real world knowledge and inquiry skills into my classroom instruction. The CRESST Academy provided a good mix of many useful hands-on activities and thought provoking articles infused with professional lectures/discussions by VCU researchers and faculty. This experience provided a strong foundation to develop lessons that could be used in all subject areas. The opportunity to observe research first hand and to have one-on-one conversation with various medical and technical professionals created an engaging and dynamic energy that was felt throughout the week.

My life science students have benefitted from my participation in the CRESST Academy in several ways. Using equipment funded through the Academy my students are able to assess indicators of their own health and wellness. Because of what I learned, I chose to emphasize health and wellness as “discussed diseases and disorders” in my unit on genetics and heredity. Obesity and diabetes are among the leading health issues in the United States today, as statistics from the Centers for Disease Control and Prevention (CDC) show that one in three people are obese. Childhood obesity can be a predecessor to juvenile diabetes and lead to adult obesity and diabetes later in life. Obesity has become a worldwide

Continued next page.

problem and childhood obesity is considered an epidemic in the US.

One of the inquiry activities that I added into my unit allowed me to approach this sensitive issue and help educate my students about the risks associated with this illness. Students learned how to read nutrition labels and use various websites to calculate the nutritional value of their meals, while keeping in mind how portion size affects this value. Students used oxygen pulse oximeters before and after exercise, digital scales for BMI index calculations, and blood pressure readings to collect and organize data into tables. The students then analyzed their data to interpret what it said about their overall wellness. They conducted an Enzyme-Linked ImmunoSorbent Assay (ELISA) lab called "What Causes Obesity?" to mimic diagnostic testing for leptin, a hormone associated with obesity. Students discussed the reality of food deserts in neighborhoods, a term I learned about during the Academy that I had not thought much about previously. Food deserts refer to the lack of healthy food choices and food shopping options in some neighborhoods, and students discuss how the lack of options contributes health and wellness of the affected communities.

The CRESST Academy provided teachers valuable time to collaborate to create and share ideas about ways to incorporate what we were learning into our curriculum to use with our students. The Academy's web

resources continue to be a place of community where lesson plans and ideas are shared. As a result of the wealth of knowledge I gained in the CRESST Academy, I am confident that I am prepared to make sure my students will know how to: find reliable resources and opportunities for mentorships, be an active participant in their community, perform hands on activities while collecting, organizing, and analyzing data, and that they will be able discuss and apply their knowledge of research in a variety of ways to address issues related to health and wellness. I would strongly recommend participation in the CRESST Academy as it will help inspire you to teach with the passion all students deserve, and help provide you with the tools to accomplish your professional goals!

Readers may find the following resources valuable based on the instructional activities described in the article:

Website for the What Causes Obesity? Lab:

www.dnadepot.com

Method for calculating BMI Index: <http://cdc.gov/healthyweight/assessing/bmi/index.html>

Video about leptin and obesity:

www.pbs.org/wgbh/nova/body/obesity.html

If you are interested in applying to the CRESST Academy or would like more information go to

www.cresst.vcu.edu or contact cresst@vcu.edu

Donna Forester, Tuckahoe Middle School, Henrico Co. P. S.

Lisa Abrams, School of Education, VCU

Patty Slattum, School of Pharmacy, VCU



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 & Repair of microscopes, balances & spectrophotometers



JMU – USGS - DMME Youth Initiative Program in Earth Sciences

The Department of Geology & Environmental Science at James Madison University is offering an engaging and immersive experience for rising high school sophomores and juniors in Virginia, where they will gain first-hand experience with field and laboratory techniques in the geosciences. Simultaneously, these students will be guided in the development of geoscience thinking skills through the generation of individualized research projects. Students selected for participation will have a demonstrable capacity for abstract thinking, and have reached a level of academic maturity suitable for integrating quantitative skills.

This program is a two-week residential course, concentrating on field and laboratory investigations in Earth and environmental science, with long-term follow-up through mentored individual research experiences during the academic year. Participating students will be able to present their findings at Virginia Junior Academy of Sciences. Rising high school sophomores and juniors who have just completed Earth science or Biology and are enthusiastic about the natural sciences (Earth, life, and environmental),

.....

Application for JMU-USGS-DMME Youth Initiative in Earth & Environmental Science - June 10-23, 2012

Name _____

Street Address _____

City, State, Zip _____

School and School Division: _____

Courses Completed (check all that apply):

Earth Science Biology Chemistry Physics

Gender: Male Female Email address _____

Phone _____ Text Number _____

Applicant Signature: _____

Parent/Guardian Name, Signature, & Contact information: _____

In the space below, please provide a brief description of your interests and experiences in Earth & environmental science.

will work with JMU faculty in geology & environmental science and staff scientists from Virginia Division of Mines, Minerals, & Energy and US Geological Survey.

Held at JMU from June 10-23 at JMU, the 20 participants will travel to sites of particular geologic and environmental interest in the Virginia mountains, piedmont, and coastal plain, analyzing their collected materials and data on-campus at JMU. Participants will be housed in a JMU dormitory for the duration of the course, with JMU Geology/Earth Science students serving as mentors and counselors. All meals and social activities will be provided to the participants while on campus. A modest tuition of \$200 will be required of each participant.

If you know a student that would interested, willing, and able to participate in this program, please share the application with them. All applications must be received by March 31st, with notifications to follow very soon afterwards. Questions? Please contact Dr. Eric Pyle at 540.568.7115 or pyleej@jmu.edu.

.....

Please select the text of the form and paste it into a text document to print your form.

Teacher Recommendation:

Teacher Name: _____ School: _____

Email Address: _____ School Phone: _____

Please attach to this application a letter of recommendation from the teacher listed above.

Please send this completed application, and a teacher recommendation, to Dr. Eric J. Pyle, Department of Geology & Environmental Science, MSC 6903, James Madison University, Harrisonburg, VA 22807. If selected, additional application materials will be sent directly to you, at which time a payment of \$200 will be required. All materials must be received by end of business, March 31st, 2012.



GreenSTEM@VCU = STEM Education + 21st Century Skills + Environment Awareness

Holly Houtz, Suzanne Kirk, Anne Wright and Lynn Pelco, Virginia Commonwealth University

Does a waterfall cascade from your school's roof every time it rains? Do you need a canoe to get from your car to the school door? You are not alone. Most schools have a problem with runoff somewhere on school grounds.

What does this have to do with STEM Education, 21st Century Skills and environmental awareness? The teachers who are participating in GreenSTEM@VCU have found that this rainy day problem can help answer two age-old student questions: "Why do I need to know this?" and "How will I ever use this in the real world?" By combining integrative STEM education with service-learning, teachers and students throughout Virginia are identifying environmental concerns in their community and researching, planning and implementing projects to address those needs.

With funding provided by Learn and Serve America (LSA), Virginia Commonwealth University (VCU) is training middle school science, technology, and mathematics teachers to focus students' academic engagement using high-quality service-learning instruction in an integrated STEM curriculum. The GreenSTEM@VCU Teacher Academy begins in the summer with an intensive program of hands-on activities at VCU's green LEED Platinum Rice Center education building and state-of-the-art School of Engineering facilities. At the Rice Center, teachers explore the function of green roofs, rain gardens, geothermal heating and solar power. VCU Life Sciences faculty guide teachers in quantifying carbon uptake by trees to determine the amount of carbon emissions that are offset by tree growth. Faculty from the School of Engineering lead teachers in investigating alternative energy topics by building model hydroelectric devices and solar cells made with blackberry juice. VCU Division of Community Engagement faculty help participating teachers build their skills in creating service-learning lessons that engage students in organized service activities to benefit the community and the environment. Teachers leave with

the ability to enhance curriculum and ramp up student enthusiasm by blending environmental service projects with reflection and classroom-based learning activities.

During the school year, teachers and students identify local community concerns related to energy or environmental issues and develop service-learning projects that address those needs. GreenSTEM@VCU projects have included developing school-wide recycling programs, conducting school energy audits, and providing recommendations to reduce energy waste. One of the topics that has most excited students is runoff management. Students determine the volume of runoff from their school building by estimating the size of the school roof and downloading local precipitation data. Students use runoff calculations to plan a rain barrel, rain garden or bioretention pond to help reduce runoff. With support from PTAs, local businesses, and state-funded grants

<http://www.vanaturally.com/vanaturally/grants.html>, students turn theory into reality and discover how STEM concepts relate to the "real world" of their own communities. Along the way, students practice valuable 21st Century Skills, such as critical thinking and problem solving, communication, collaboration, creativity and innovation.

If you are interested in attending the 2012 GreenSTEM@VCU Academy, please contact Sue Kirk at svkirk@vcu.edu or download the program flier at <http://db.tt/9ci80Iji>. In addition to the summer academy, an online curriculum of video modules, lessons, and K-12 Standards for High-Quality Service-Learning will be available worldwide through the VCU website in Summer 2012. We hope you enjoy the following GreenSTEM@VCU lesson plan on



Down Came the Rain: Roofs and Runoff Grade Levels: 6 -12



runoff pollution.

Objective: To determine the volume of runoff from a school or home roof. Roof area will be estimated using Google Earth aerial imagery, and online precipitation data will be downloaded. Runoff volume will be determined using the following equation.

$$V = ARC$$

V = volume of runoff (gal)

A = area of roof (ft²)

R = amount of rain (ft)

C = Conversion Factor: 7.48 gal/ft³

Standards:

National Science Education Standards

Unifying Concepts & Processes; Standard A - Science as Inquiry; Standard D - Earth & Space Science; Standard E - Science & Technology; Standard F - Science in Personal and Social Perspectives

National Council of Teachers of Mathematics Standards

Numbers & Operations: 6-8, 9-12; Algebra: 6-8; Geometry: 6-8; Measurement: 6-8, 9-12; Problem Solving: 6-8, 9-12; Communication: 6-8, 9-12; **Connections 6-8, 9-12**

National Educational Technology Standards

Standard 1 - Creativity and Innovation; Standard 2 - Communication and Collaboration; Standard 3 - Research and Information Fluency; Standard 4 - Critical Thinking, Problem Solving, and Decision Making; Standard 6 - Technology Operations and Concepts

AP Environmental Science Focal Areas

Humans alter natural systems; Environmental problems have a cultural and social context; Human survival depends on developing practices that will achieve sustainable systems

Virginia Standards of Learning

Science: 6.7, 6.9, E.S.1, ES.2, ES.3, ES.7, ES.9, ES.13

Mathematics: 6.6, 6.7, 6.10, 6.18, 7.3, 7.4, 7.5, 7.14, 8.3, 8.7, 8.11

Computer/Technology: 6-8.1, 6-8.5, 6-8.6, 6-8.7, 6-8.8, 9-12.6, 9-12.8

Materials: Computers, Internet, Google Earth (free online), Calculators

For PowerPoint's and additional resources, go to <https://sites.google.com/site/vcurunoff/>

Background (Discuss with students): Runoff occurs when water from precipitation flows over land instead of soaking into the ground. Runoff is a component of the water cycle. Name some outdoor areas that would absorb rainwater. (Ex. Wetlands, forests, and to a lesser extent lawns.) Name some outdoor areas that would cause runoff. (Ex. Hard, impervious surfaces, such as paved areas, roads and buildings.) Natural areas tend to absorb more rainwater and have less runoff than manmade areas. When humans replace natural areas, such as forests, with impervious surfaces, such as buildings and roads, we impact the water cycle by creating excessive runoff.

As runoff moves along the ground, it can pick up oil, pesticides, and fertilizers. Runoff containing pollutants is called non-point source pollution. Even the roofs of our buildings can be sources of heavy metals, weather-proofing chemicals, pathogens that cause disease, pesticides that kill insects, and herbicides that prevent plant growth. Polluted runoff can move into drinking water sources, such as groundwater, streams, and rivers.

In this activity, we will estimate the volume of runoff from our roof. We will measure our roof using Google Earth and download online precipitation data. We will use the equation $V=ARC$, where runoff volume (V) is determined by finding roof area (A) times the amount of precipitation (R); we will convert units (C) to find runoff in gallons.

Procedure:

Step 1: Find A, the area of the roof in square feet.

- 1) Download Google Earth free at www.google.com/earth. Open the Google Earth application.
- 2) Search for your school or home by typing your school name or address in the "Fly to" box.
- 3) Click the ruler icon on the top toolbar to open the ruler tool. Set the units to feet.
- 4) Use the ruler tool to measure the length of the roof. Record the measurement. Use the ruler to measure width of the roof and record.
- 5) Use a calculator to determine area.

Ex. 1)



Ex. 2) Many roofs are not in the shape of a perfect rectangle. The roof shape can often be broken down into smaller rectangles. To find the total roof area, sum the areas

of the smaller rectangles.

Ex. 2) Continued:



Variation: Obtain blueprints of your school and have students calculate roof area.

Step 2: Find R, the amount of rain in feet.

Download local precipitation data online. Note that most sites display precipitation in inches, which must be converted to feet. Suggested sites:

<http://www7.ncdc.noaa.gov/IPS/coop/coop.html> &
http://www.sercc.com/climateinfo/historical/historical_va.html

Variation: Monitor a rain gauge or use the value for VA's long-term average precipitation (42.7 in/yr = 3.5 ft/yr).

Step 3: Determine V, the volume of runoff in gallons.

You found A, the area of the roof in square feet and R, the amount of rain the roof receives in feet. The conversion factor, C, will convert cubic feet to gallons. Use the equation $V=ARC$ to determine how many gallons of runoff your roof produces.

Reflection:

- What types of contaminants might be present in your roof runoff? Are there contaminants that might come from regional sources? (E.g. Factories in the area may deposit smoke, smut, and chemicals on roof tops.)
- What are some ways that runoff might affect your local environment? How could runoff affect your watershed?
- What potential actions could reduce runoff from your roof?

Extensions:

- Compare the amount of runoff in a day, month, and year. Determine if runoff is greatest in a particular season.
- Determine the amount of runoff from parking lots, hardtops, and other impervious surfaces at your school.
- Determine the number and locations of outflows that remove water from the roof. Investigate the vegetation in these areas.
- Measure the volume of runoff from the roof using 5 gallon buckets.
- Use Google Earth aerial imagery to identify manmade runoff zones in Virginia. (Impervious urban areas are gray in color.)
- Investigate USGS maps that model runoff at <http://waterwatch.usgs.gov/new/index.php?id=romap3>
- Research the quality of local drinking water at <http://www.ewg.org/tap-water/home>

Service-learning Projects:

Have students design a service-learning project implementing a green solution at your school! Local rain barrel workshops are often free or low cost to teachers. Involve the art class and shop class in building and decorating your rain barrel. Create a rain garden with water-loving plants, measure plant growth, and monitor the animals that colonize your green space. Get the students excited about educating their classmates, parents, and community about green solutions. To learn more about service-learning visit <http://www.servicelearning.vcu.edu> and <http://www.servicelearning.org/what-service-learning> For more about runoff, please contact Holly Houtz at houtzhs@vcu.edu.



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Proudly Announces

Teacher Enrichment Program (TEP) Formerly the
National Lab Skills Initiative The Teacher Enrichment Program helps to assure a future
talented and diverse U.S. workforce in science, technology, engineering and mathematics

(STEM). **Components of TEP** The Teacher Enrichment Program is available cost-free to
science teachers as well as teachers of humanities who are interested in broadening the perspective of
science in their classroom.

- **CLEARINGHOUSE** is an online compendium of science resources within targeted states. Programs within the Clearinghouse include public/private partnerships that are cost effective, replicable, scalable and assessable. Teachers can access content involving more than 1,000 content rich STEM sites.
- **BITE of SCIENCE...Dinner with a Scientist.** This opportunity brings together 25 teachers with 1 to 2 leading and cutting edge scientists. Teachers will have the opportunity to interact with researchers from industry, academia, and government that share a common research area, i.e. environment, health, national security, energy or agriculture.

Teachers will:

- o Be exposed to research techniques and strategies for trouble shooting in the laboratory.
- o Be afforded the opportunity to ask questions and interact directly with the scientist.
- o Be able to network with like minded peers.

- **LAB BENCH** is a password protected collection of resources for teachers that attend the **BITE of Science ...Dinner with a Scientist** provided by CEE. It is an amazing, interactive, scientific resource provided to teachers and their students by cutting edge scientists for use in their classrooms. Content in the Lab Bench includes PowerPoint presentations, video of the scientific presentations, targeted materials from the Clearinghouse as well as a cost effective laboratory activities. Additional content will be submitted by public and private entities as well as Research Science Institute and USA Biology Olympiad alumni
- **TEP Blog** will serve to encourage collaboration and understanding between STEM teachers and leaders in the U.S. and global communities. Contributions to the blog will come from U.S. and international scientists and will provide opportunity for high school teachers and university professors to discuss "Big Ideas in Science."
- **TEP/STEM Round Table Discussions** will be hosted regularly for science teachers by CEE in Virginia to discuss critical science and laboratory education.

Teacher Enrichment Program Initial Roll Out States

Virginia California Illinois Indiana Texas

Honoring One of Our Own:

LaTonya E. Waller 2011 Virginia Teacher of the Year



LaTonya Waller was selected as Richmond City's Teacher of the Year as well as the Region I Teacher of the Year. Waller has taught earth and life sciences at Lucille Brown Middle School for the past four years.

Waller, is currently in her ninth year with Richmond Public Schools. Prior to teaching at Brown, she taught at the district's Broad Rock Elementary School. Waller also coaches the school's Mind Games team and sponsors Brown's science, engineering and forensics clubs.

This September Waller was selected from the eight Virginia 2011 Regional Teachers of the Year to

be the Commonwealth's nominee in the Council of Chief State School Officers' National Teacher of the Year program, which is sponsored by ING Foundation.

"LaTonya Waller instills in her students a love of learning and a commitment to community service," said Superintendent of Public Instruction Patricia I. Wright. "She is a mentor to her colleagues and epitomizes excellence in science instruction."

VAST is "dedicated to the nurturing and advancement of superior science education" and we recognize LaTonya Waller as a role model and congratulate her on her recognitions.

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Together and Apart

I went to turn the grass once after one
Who mowed it in the dew before the sun.

The dew was gone that made his blade so keen
Before I came to view the leveled scene.

I looked for him behind an isle of trees;
I listened for his whetstone on the breeze.

But he had gone his way, the grass all mown,
And I must be, as he had been, —alone,

‘As all must be,’ I said within my heart,
‘Whether they work together or apart.’

But as I said it, swift there passed me by
On noiseless wing a ‘wilderer butterfly,

Seeking with memories grown dim o’er night
Some resting flower of yesterday’s delight.

And once I marked his flight go round and round,
As where some flower lay withering on the ground.

And then he flew as far as eye could see,
And then on tremulous wing came back to me.

I thought of questions that have no reply,
And would have turned to toss the grass to dry;

But he turned first, and led my eye to look
At a tall tuft of flowers beside a brook,

A leaping tongue of bloom the scythe had spared
Beside a reedy brook the scythe had bared.

I left my place to know them by their name,
Finding them butterfly weed when I came.

The mower in the dew had loved them thus,
By leaving them to flourish, not for us,

Nor yet to draw one thought of ours to him.
But from sheer morning gladness at the brim.

The butterfly and I had lit upon,
Nevertheless, a message from the dawn,

That made me hear the wakening birds around,
And hear his long scythe whispering to the ground,

And feel a spirit kindred to my own;
So that henceforth I worked no more alone;

But glad with him, I worked as with his aid,
And weary, sought at noon with him the shade;

And dreaming, as it were, held brotherly speech
With one whose thought I had not hoped to reach.

‘Men work together,’ I told him from the heart,
‘Whether they work together or apart.’

— **The Tuft of Flowers**
by Robert Frost

My friend Loraine and I have been at our school for over two decades, she an AP English teacher, I physics. We mostly inhabit two different floors in our school, but our paths joined down a corridor one clouded morning for one of those conversations on the hoof, as it were, the context for which only teachers setting new track records between class and copy room can fully appreciate. Behind her customary smile and upbeat countenance was a tone of frustration and fatigue: “Oh,” she sighed, “just three more years and I’m outta here. Got my minimum 30 years and I’m gone...gotta have a life, you know.” I was shocked because Loraine has a large and enthusiastic student following, has managed our yearbook, oversees and nurtures the school’s considerable number of large potted trees, and initiated our recycling program years ago. Recycling has now expanded to include separate paper and plastic bins in every

classroom of our 2600-student school. I would select her hands-down as our teacher of the year — a no nonsense, dedicated woman with seeming boundless energy and eclecticism. A week or two later we were in a student-parent conference over a very troubled senior who probably will not graduate since his aloof and neglectful attitude has, at present, led to three failed core courses. As she leaned forward in her chair, there were fire and love in her voice, “Now, Nathan [all names changed], you and I have had long conversations all year about this and it just isn’t working. You would shine at a smaller more intimate place like Eaglebrook [alternative high school] where you can get the continual attention you need right now. Trust me.”

Fast forward to a conversation with the hostess of a surprise birthday party, herself a 6th grade teacher, who had a

Continued...

lengthy list of frustrations at her Maryland school over the regimentation, requirements, and pressures for high exit test scores which the faculty experiences. Sally did not know if she could last another four years until she would reach 20 years for the full retirement age in the Maryland system. Even then she complained over the low percentage of her last three-year-average salary which she would be receiving. Yet, as soon as she began talking about her kids in the classroom, her tone changed and her eyes glowed; the hard lines and tense body posture relaxed: she loved them and what she was doing, but not the way in which she felt she had to do it.

Listen in your heart to this version of an ancient tale as told by Esther Acosta in *The Starfish*, The Rocky Mountain Storytellers Guild Newsletter:

A grandson told of his anger at a schoolmate who had done him an injustice. Grandfather said: "Let me tell you a story."

I, too, have felt a great hate for those that have taken so much, with no sorrow for what they do. But, hate wears you down and does not hurt your enemy. It is like taking poison and wishing your enemy would die. I have struggled with these feelings many times.

It is as if there are two wolves inside me: one is good and does no harm. He lives in harmony with all around him and does not take offense when no offense was intended. He will only fight when it is right to do so, and in the right way.

But the other wolf is full of anger. The littlest thing will set him into a fit of temper. He fights with everyone, all the time, for no reason. He cannot think because his anger and hate are so great. It is hard to live with these two wolves inside me, for both of them try to dominate my spirit.

The boy looked intently into his grandfather's eyes and asked, "Which one wins, Grandfather?" The grandfather solemnly replied, "The one I feed."

In January in *Nation of Change* was a short piece about teachers in the Chester Upland School District in Delaware County, Pennsylvania who reacted after the Governor announced a \$900 million dollar cut in the state's education funding. At a union meeting the employees passed a resolution stating they would remain at work without pay "as long as we are individually able." An elementary school math and literacy teacher commented, "It's alarming; it's disturbing. But we are adults; we will make a way. [Our] students don't have any contingency plan. They need to be educated, so we intend to be on the job."

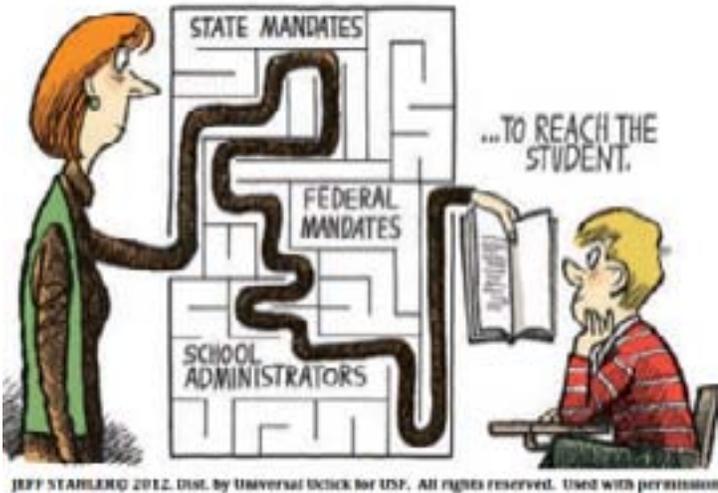
The grandfather and the Pennsylvania teachers have an

important message for us and for our students, a message which goes to the heart of our mission as teachers. The context in which we teach can be even more powerful than the content we manage or impart. Although we focus on one individual student at a time in our daily interactions, there is a silent but powerful – and largely invisible – "community" of individuals and forces which influences and interprets our message. Biologically, we are told, there are at least ten times more bacterial cells than human cells in our body. There is the invisible microbiome in which our genome is expressed. According to many evolutionary biologists, our genes and those of our microbiota make up a single "hologenome." As with our biology, so with our educational ecology.

In a fascinating article in *The Atlantic*, October 2011, Richard Florida describes progress throughout human history as dependent on the expansion of social networks, specifically the synaptic significance of skills which exist in "humanity's greatest social invention" – the city. He compares three types of job skills to average income in cities: analytic, social, and physical skills. It used to be thought that advances in cognition and memory were the main drivers of human evolution. More recent research has identified communities, not genes, as the prime mover of human evolutionary progress. Once local population density reaches a certain threshold, major evolutionary advances have occurred. The negative aspects of high population density (scarcity of resources, increased incidence of disease, higher crime rates, difficulties in transportation) seem eclipsed by the advances caused by analytic, social and physical skills. More than half of today's human population lives in cities, expected to expand to 70% by mid-21st Century.

The emphasis here is upon the significance of human connectivity: as Florida puts it, "the ease, frequency and range of interaction in cities are what really matter." Here are the social skills he identifies as essential to this interaction: persuasion, bringing the right people together on a project, social perceptiveness, ability to help develop other people, and a **keen sense of empathy**. [Emphasis mine.] In our rush to embrace mathematical, scientific and technological education, he avers, we need also to cultivate social intelligence more fully, leading to better teamwork, creative collaboration, and leadership. These skills are strongly complementary to the analytical skills we value in science education.

Whether microflora and their human hosts, interactions of social, analytic or physical skills in human communities, or teachers who are committed and caring, it seems Robert



the butterfly weed which the scythe of the mower in the dew has spared. We think we are alone, or wish to be in our frustrations or bureaucratic mazes, yet, as Jeff Stahl's cartoon reminds us, we are connected, and will find a path to each needy student. Weary, we seek the noontime shade – alone or together, together or apart – and the dew, the brook, the butterfly and the flower remain to inspire us.

George

Frost's wisdom lies at the heart of it all. In sweet paradox, "Men work together" I told him from the heart, / "Whether they work together or apart." Sometimes in our fury or fatigue we need a bewildered butterfly to reconnect us to

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.

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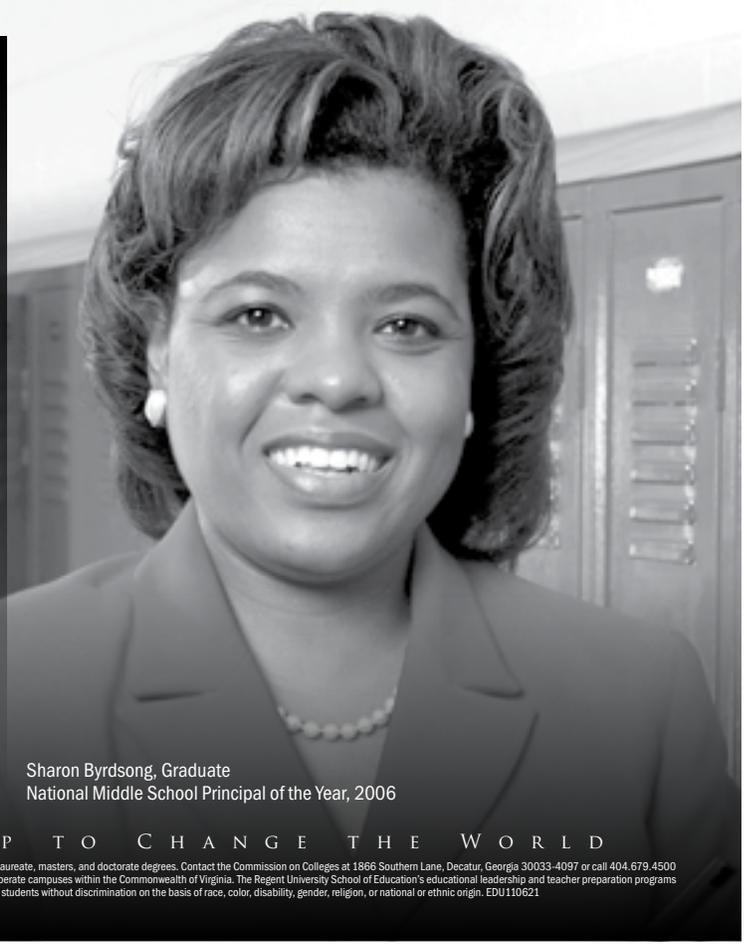
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Sharon Byrdsong, Graduate
National Middle School Principal of the Year, 2006

Virginia Department of Education



SOL Practice Assessment Tools (ePat)

In spring 2012, the Standards of Learning (SOL) science tests will contain field test items that assess the 2010 Science SOL, and beginning in the 2012-2013 academic year, the tests will assess the full implementation of the 2010 Science SOL. In order to support student preparation for test questions that assess the new SOL, a set of practice items delivered via electronic Practice Assessment Tools (ePat) has been developed for each science test.

Each ePat (grade 3, grade 5, grade 8, and end-of-course (EOC) Earth Science, Biology, and Chemistry) will consist of approximately 10 practice test questions. These practice questions will provide students an opportunity to become familiar with the types of test questions that will be administered to assess the 2010 Science SOL. A Science Practice Item Guide, which may be used by teachers or other adults to guide students through the practice items, has been developed for each ePat. While the use of the guides with the ePats is not required, it is strongly

encouraged, as it will help to ensure that students are familiar with the types of items they may encounter.

Some of the items field-tested in spring 2012 on the grades 3, 5, 8, and EOC online assessments will be “technology-enhanced.” These items will not be multiple-choice and will require students to indicate their answers in other ways. The ePat for these grade levels will include questions that allow students opportunities to practice answering these technology-enhanced items.

The sets of practice items and the guides are posted on the Virginia Department of Education Web site at: http://www.doe.virginia.gov/testing/sol/practice_items/index.shtml

Please note that the practice items are samples only. They do not cover all science content for the grade level or course, nor do they provide examples of all item types of functionality that may be found in the field test items.

PAEMST Awards 2012

Reminder!!! It is easy as clicking on the Nominate a Teacher link below

The Presidential Awards for Excellence in Mathematics and Science Teaching are the Nation’s highest honors for teachers of mathematics and science. Awardees serve as models for their colleagues, inspiration to their communities, and leaders in the improvement of mathematics and science education. Since 1983, more than 4,100 teachers have been recognized for their contributions in the classroom and to their profession. If

you know great teachers, nominate them to join this prestigious network of professionals.

NOMINATIONS NOW OPEN

The 2012 Awards will honor math and science teachers working in grades K-6. (Save your enthusiasm for teachers of grades 7-12 for the 2013 Awards).

<https://www.paemst.org/nomination/nominate>

SIF Association Names Four Virginia Education Finalists Leadership Efforts to Improve Data Sharing Receive Recognition

The Schools Interoperability Framework (SIF) Association last month recognized four Virginia education entities as finalists for the 2012 SIF Excellence Awards at the association’s annual meeting:

- The Virginia Department of Education (VDOE) was named a finalist in the Outstanding State Education Agency SIF Implementation category.
- VDOE’s Bethann Canada, director of the Office of Educational Information Management, was a finalist in the Outstanding Individual Leadership category.
- Roanoke Public Schools, as well as the Virginia School for the Deaf and the Blind, were named finalists in the category of Outstanding Local Education Agency SIF Implementation.

The SIF Association is an industry-supported, membership organization that developed a set of rules and definitions that enable instructional and administrative educational software applications from different companies to interact with and share data seamlessly. The platform-independent, vendor-neutral rules and definitions — known as the SIF implementation specification — make it possible for programs within a school or division to share data without additional programming and without requiring software vendors to learn and support intricacies of other vendors’ applications. The goal is to provide school administrators, teachers and other school personnel access to the most current and accurate data available.



For the sixth consecutive year, Dominion will cultivate learning with Project Plant It!, a program developed to educate children, plant trees and improve the environment.

Teachers in participating school systems received a kit of lesson plans, posters, stickers and other materials for the classroom to help students learn about the important role of trees in the ecosystem. Students will receive a tree seedling to plant at home on Arbor Day, April 27, 2012. More than 25,000 elementary children across the Commonwealth are enrolled in Project Plant It! this year.

Best of all, students can boost their science IQ while watching videos and playing interactive online games about trees and the environment at www.projectplantit.com.

On the "Student" tab, there are five videos to learn all about trees and how to care for them. In addition, Project Plant It! has added three new games that align with third-grade science SOLs about plant life and vocabulary, including:

Timed Jigsaw Puzzles

These interactive brain-benders offer three tree puzzles with increasing levels of difficulty. Kids move the pieces by dragging them to their proper place in the tree-shaped puzzle while fighting the clock. Each completed puzzle will reveal facts about the tree being created.



This March, science and STEM educators in Virginia can participate in a free workshop from Vernier Software & Technology. The 4-hour hands-on workshops will teach attendees how to integrate computer and handheld data-collection technology into their science curriculum while providing a valuable professional development opportunity.

The workshops will be led by current or former classroom science and math teachers, and will provide educators with valuable tips and lesson ideas that they can use in their chemistry, biology, physics, middle school science, physical science, and Earth science classes. The workshops are offered on the following dates:

- March 15 – Norfolk
- March 17 – Richmond
- March 19 – Arlington

To learn more about the workshop or to register, please visit

<http://www.vernier.com/workshop>

Institute of Electrical and Electronic Engineers (IEEE) Free Video

Watch how engineers are crossing engineering disciplines and industries to apply computing, technology, math and science to solve complex world problems. The video encourages viewers to think about how the 1.6 million engineers worldwide are behind some of the greatest innovations and inventions of modern times.

Please share this with Science teachers as far and as wide as you can, to start poking the minds of our young people that they can do these things with the right resources. <http://solutionists.ieee.org/>

Dominion's Project Plant It! Showcases Science SOLs

Leaf Identification and Memory

Children can improve their memory while learning about the different types of tree leaves through a clever matching game. Cards that are successfully matched will display a larger image of the leaf and a short paragraph of information about it.

Tree ID

Which tree is the tallest? Which tree is the youngest? What type of tree thrives in Virginia? Which tree has leaves of three? This interactive game of identification will use comparative images to teach children how to recognize each species of trees, as well as the developmental stages of a tree.

There are many other features on the website that will appeal to science teachers around Virginia. On the "Teacher" tab, there's a Teacher Toolbox listing all of the materials that can be downloaded at no charge. And don't miss the "Get Active!" section with almost a dozen ideas—such as "Be a Scientist"—to get children out of the classroom and into the dirt for a personal encounter with Mother Nature.

Visit <http://www.projectplantit.com> to view videos, order free tree seedlings (while supplies last), download teaching materials or play several educational games about the science of trees. Be sure to "Like" **Project Plant It! on Facebook, too!**

Time Warner Cable Announces New STEM Ideation Competition for Students

As part of Connect a Million Minds (CMM), Time Warner's five-year, \$100 million commitment to science, technology, engineering, and math (STEM) education, the company has launched Wouldn't It Be Cool If ..., a new STEM ideation competition. The challenge is for students, ages 10–15, to use creativity and imagination to develop ideas that could make a difference in their lives, communities and even the world, and then show how STEM can make them a reality.

Students can learn more and/or submit their ideas online at <http://www.wouldntitbecoolif.com> by March 28. Four finalists will have the chance to travel to the FIRST Robotics Championship in St. Louis to pitch their ideas to will.i.am, Dean Kamen, and other guest judges. One grand prize winner will develop their idea with Fahrenheit 212.

66th Annual Holiday Lake Forestry Camp

The 66th annual Holiday Lake Forestry Camp will be held June 18–23, 2012, at Holiday Lake 4-H Center. Teachers are invited to nominate students aged 13–16 who have an interest in natural resources and have not attended the camp previously. Forestry Camp provides field-based learning experiences and is an excellent introduction to natural resource careers. For more information and an online nomination form, visit <http://www.dof.virginia.gov/edu/camp.htm>. Nominations are open through April 16. Please contact ellen.powell@dof.virginia.gov with any questions.

Ellen R. Powell Conservation Education Coordinator Virginia Department of Forestry, 900 Natural Resources Dr., Ste. 800 Charlottesville, VA 22903 434-220-9083

Eric M. Rhoades Science Coordinator Virginia Department of Education 101 N. 14th Street Richmond, VA 23219 804.786.2481 Office

Kavli Science Video Contest- STEM Opportunity for Grades 6-12

The Kavli Science Video Contest was founded as a USA Science & Engineering Festival student competition. The contest promotes S.T.E.M subject learning by challenging students to research, brainstorm, and communicate creatively through video. This year the contest theme is "Save the World Through Science and Engineering", inspired by the National Academy of Engineering's Grand Challenges. We are asking students to use their imaginations and investigative skills to tackle global challenges, explore new frontiers, and to discover and discuss the inventions that will help mankind and improve life on our planet. Grs. 6-12 students make a short video(:30-:90) that shows how scientific discoveries and inventions can improve our lives and change our world, either right now or in the future.

The winners receive cash prizes. The first place winner will also receive a travel stipend to attend the Expo in DC. Entry deadline is March 21, 2012.

The National Association of Secondary School Principals has placed this program on the NASSP National Advisory List of Student Contests and Activities for 2011-2012.

To learn more:

<http://www.usasciencefestival.org/2012festival/contests/kavli-video-contest>

University of Virginia's School of Engineering and Applied Science (SEA) OPEN HOUSE

Prospective students and the public are invited to learn about the wonders of engineering at the University of Virginia's Engineering Open House,

<http://www.seas.virginia.edu/events/openhouse.php>

to be held March 17, from 9 a.m. to 3 p.m., in Thornton Hall – the home of U.Va.'s School of Engineering and Applied Science.

<http://www.seas.virginia.edu/>

The event draws more than 1,000 prospective students and their families each spring.

From novel courses in which students learn engineering concepts by building off-road baby strollers,

<http://www.virginia.edu/uvatoday/newsRelease.php?id=13684> or electric guitars,

<http://www.virginia.edu/uvatoday/newsRelease.php?id=5761> to

leading-edge research in alternative energy, transportation and health care, the Open House showcases how engineering at U.Va. is helping to develop the future leaders of innovation.

Teacher-Ranger-Teacher (TRT) program

Shenandoah National Park is seeking applicants for the Teacher-Ranger-Teacher (TRT) program

The TRT program is seeking teachers to assist park staff with creating and implementing programs and educational materials on climate change impacts and environmental sustainability. Applicants should have a basic knowledge of climate change issues, public speaking experience, and skill in writing effective lesson plans. The Teacher-Ranger-Teacher program provides an opportunity for a teacher to work as a park ranger during the summer and then take his/her experience back to the classroom. More detailed information and application procedures are posted on the Shenandoah National Park web page:

<http://www.nps.gov/shen/forteachers/teacher-ranger-teacher.htm>

VIRGINIA SCHOOLYARD HABITAT



PROGRAM



Your School Can Request a Teacher Workshop

The VA Department of Game and Inland Fisheries offers six-hour workshops for K-12 teachers on planning and using a schoolyard habitat as an outdoor classroom to teach the state Standards of Learning. Workshops are usually arranged for the faculty at one school. Go to www.vanaturally.com and click on "WET, WILD... WORKSHOP REQUEST FORM."



Do You Already Have a Schoolyard Habitat?

Apply for a Habitat Partners® Certificate! A good habitat has food, water and cover for a variety of wildlife species. If your school qualifies for a certificate, you can receive a Habitat Partners® sign. Application available at www.dgif.virginia.gov/habitat/schools/

ACS-Hach High School Chemistry Grant

The American Chemical Society (ACS) is currently seeking applications for the ACS-Hach High School Chemistry Grant. The ACS-Hach High School Chemistry Grant is awarded to high school chemistry teachers for any purpose that enhances the teaching and learning of chemistry within their classrooms. This includes covering basic needs as well as supporting new, innovative activities. Teachers can request up to \$1,500. We are currently accepting applications through April 1, 2012.

Details about the grant and the application process can be found at <http://www.acs.org/hach>.

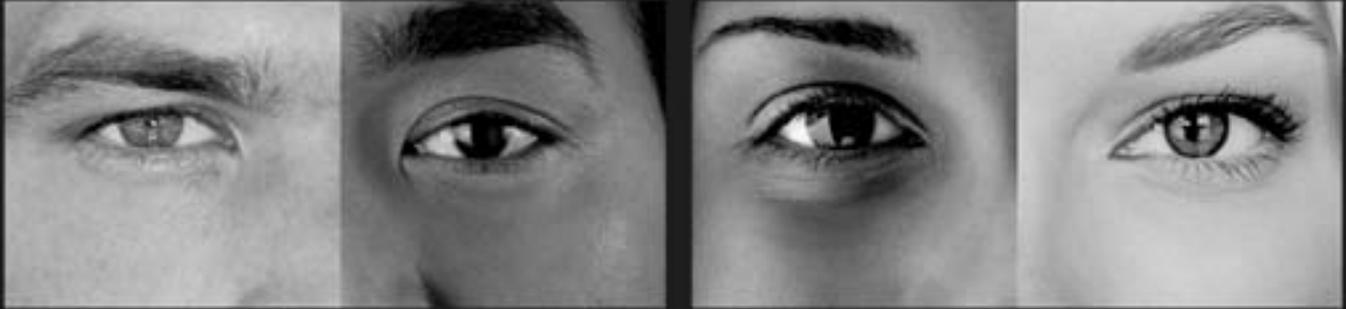
LUNAR WORKSHOP FOR EDUCATORS!

Sponsored by the Lunar Reconnaissance Orbiter mission
July 9-13, 2012 • NASA Goddard Space Flight Center • Greenbelt, MD

Grade 6–12 science teachers are invited to attend a free workshop focused on lunar science, exploration, and how our understanding of the Moon is evolving with the new data from current and recent lunar missions. The Lunar Reconnaissance Orbiter (LRO) has allowed scientists to measure the coldest known place in the Solar System, map the surface of the Moon in unprecedented detail and accuracy, find evidence of recent lunar geologic activity, characterize the radiation environment around the Moon and its potential effects on future lunar explorers – and much, much more!

Workshop participants will have the opportunity to tour the LRO Mission Operation Center and the Goddard spacecraft testing facilities.

For more information and to register, visit <http://lunar.gsfc.nasa.gov/lwe/workshop2012greenbelt.html>



RACE®

Are We So Different?

A Project of American Anthropological Association
 Funded by Ford Foundation & National Science Foundation

.....

Visit the **Race: Are We So Different?** exhibition through April 29, 2012 at the Science Museum of Virginia to explore the issues of Race and racism in the United States. This thought-provoking exhibit addresses these highly personal topics from three different perspectives to tell a compelling story.

.....

SCIENCE:

Discover that human beings are more alike than any other living species, and no one gene or set of genes can support the idea of race.

HISTORY:

Learn the role of economic interests, popular culture, science and politics in shaping our concept of race.

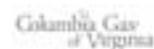
EVERYDAY:

Explore the personal experiences of race in our schools, neighborhoods, health care systems, sports and entertainment industries, as race exists socially and culturally.

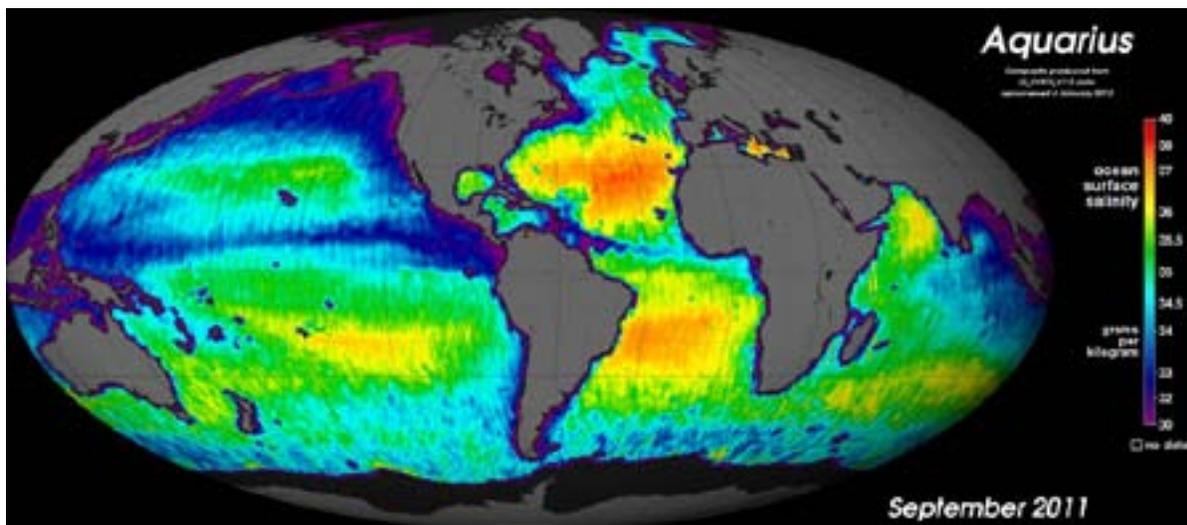


2500 West Broad Street, Richmond, Virginia 804.864.1400 www.smv.org

Proudly sponsored by:



The Hidden Power of Sea Salt, Revealed



Aquarius produced this map of global ocean salinity. It is a composite of the first two and a half weeks of data. Yellow and red represent areas of higher salinity, with blues and purples indicating areas of lower salinity.

Last year, when NASA launched the Aquarius/SAC-D satellite carrying the first sensor for measuring sea salt from space, scientists expected the measurements to have unparalleled sensitivity. Yet the fine details it's revealing about ocean saltiness are surprising even the Aquarius team.

"We have just four months of data, but we're already seeing very rich detail in surface salinity patterns," says principal investigator Gary Lagerloef of Earth & Space Research in Seattle. "We're finding that Aquarius can monitor even small scale changes such as specific river outflow and its influence on the ocean."

Using one of the most sensitive microwave radiometers ever built, Aquarius can sense as little as 0.2 parts salt to 1,000 parts water. That's about like a dash of salt in a gallon jug of water.

"You wouldn't even taste it," says Lagerloef. "Yet Aquarius can detect that amount from 408 miles above the Earth. And it's working even better than expected."

Salinity is critical because it changes the density of surface seawater, and density controls the ocean currents that move heat around our planet. A good example is the Gulf Stream, which carries heat to higher latitudes and moderates the climate.

"When variations in density divert ocean currents, weather patterns like temperature and rainfall are affected. In turn, precipitation and evaporation, and fresh water from river outflow and melt ice determine salinity. It's an intricately connected cycle."

The atmosphere is the ocean's partner. The freshwater exchange between the atmosphere and the ocean dominates the global water cycle. Seventy-eight percent of global rainfall occurs over the ocean, and 85 percent of global evaporation is from the ocean. An accurate picture of the ocean's salinity will help scientists better understand the profound ocean/atmosphere coupling that determines climate variability.

"Ocean salinity has been changing," says Lagerloef. "Decades of data from ships and buoys tell us so. Some ocean regions are seeing an increase in salinity, which means more fresh water is being lost through evaporation. Other areas are getting more rainfall and therefore lower salinity. We don't know why. We just know something fundamental is going on in the water cycle."

With Aquarius's comprehensive look at global salinity, scientists will have more clues to put it all together. Aquarius has collected as many sea surface salinity measurements in the first few months as the entire 125-year historical record from ships and buoys.

"By this time next year, we'll have met two of our goals: a new global map of annual average salinity and a better understanding of the seasonal cycles that determine climate."

Stay tuned for the salty results. Read more about the Aquarius mission at aquarius.nasa.gov.

Other NASA oceanography missions are Jason-1 (studying ocean surface topography), Jason-2 (follow-on to Jason-1), Jason-3 (follow-on to Jason-2, planned for launch in 2014), and Seawinds on the QuikSCAT satellite (measures wind speeds over the entire ocean). The GRACE mission (Gravity Recovery and Climate Experiment), among its other gravitational field studies, monitors fresh water supplies underground. All these missions, including Aquarius, are sponsors of a fun and educational ocean game for kids called "Go with the Flow" at

<http://spaceplace.nasa.gov/ocean-currents>.

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

Goto <http://aquarius.nasa.gov/> more info for more information



VAST CREATIVE SCIENCE TEACHING MINIGRANT 2012 APPLICATION

The purpose of the VAST Mini-grant program is to provide seed money for innovative curriculum activities which expand learning opportunities for science students. Team applications are welcome, however one person must be designated as the Project Director. The Project Director must be a member of VAST (dues paid for 2012), must have taught at the elementary or secondary level for a minimum of three years, and must be currently employed as a teacher.

Awardees will be selected by a committee appointed by the VAST President. The committee will be looking for projects that will directly impact student learning in the science classroom. The committee will also evaluate 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. Preference will be given to persons who have not received prior VAST Mini-grant awards. The selection committee may elect to not make an award if the proposals do not meet the stated criteria. It is anticipated that most awards will be made in the range of \$200-\$500. VAST distributed awards totaling \$1,500 in 2011.

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.

Upon completion of the funded activity the Project Director is responsible for submitting the following by **June 10, 2013**

- 1) a short summary report to president@vast.org ;
- 2) a brief article about the project for the newsletter to newsletter@vast.org ;
- 3) an accounting of how/where the project funds were spent to treasurer@vast.org ;
- 4) arrange to make a presentation sharing the project with others - VAST PDI Presenter forms may be found at www.vast.org ; and
- 5) return any unused funds to the VAST Treasurer.

Submittal deadline is June 1, 2012
Recipients will be notified, and funds sent, by July 1, 2012

The Mini-grant requirements and application form may be accessed on the VAST Web site www.vast.org .

If not submitted on-line, this form is to be copied and submitted as a cover-sheet. Please fill in (print) all information, and attach:

- 1) a budget showing how you plan to utilize the funds; and,
- 2) a summary of the project details (2-page maximum) - to include: general purpose, goals, a plan of action, anticipated outcomes, and why you need financial assistance.

Project Title: _____ Funding requested: \$ _____
 Project Director's name: _____ School: _____
 Home Address: _____ City _____ Zip _____
 Home Phone: ____ - _____ e-mail: _____
 School Division: _____ School Phone: ____ - _____
 Additional team members:
 Name(s): _____
 The project will: Serve grades: _____ ; Impact (#): _____ Students and _____ Staff members. Agreed to:

Signature of Project Director

Date

Signature of Principal/Supervisor

Date

All proposals must be received or postmarked by June 1, 2012 to be considered
 Send To: VAST Awards Committee c/o Don Foss, 109 St. Ives Road., Charlottesville, VA 22911
 e-mail: fossd1@comcast.net Phone: 434-973-370



Virginia Association of Science Teachers, Inc.

2012 AWARDS NOMINATING FORM

Please make time to recognize the accomplishments of an individual who has “made a difference” in science education - nominate them for an Annual VAST Award. Nominees do NOT need to be a member of VAST. Awardees will receive an engraved plaque at the November 2012 PDI and will be reimbursed up to \$150 for VAST conference (PDI) expenses.

Awardees will be selected by a committee appointed by the VAST President.

Nominations are due by August 20, 2012.

Procedure: (This form can be filled out on-line from the VAST Web site (www.vast.org))

1. Fill in the information requested in (A) and (B) - above.
2. Select the appropriate category (C), (D) or (E) - below.
3. Attach as many pages as needed to describe the major accomplishments, student learning, and/or any other activity for which you are nominating this person.

Nomination Information: (Please type, print, or fill in on-line)

A. Nominee

Full Name: [Dr., Mr., Mrs., Ms] _____

School Division/Employer: _____

School: _____ E-mail Address: _____

Home Phone: _____ Business Phone: _____

Home Mailing Address: _____

City: _____ State: ____ Zip: _____

B. Nominator

Full Name: [Dr., Mr., Mrs., Ms] _____

School Division/Employer: _____

School: _____ E-mail Address: _____

Home Phone: _____ Business Phone: _____

Home Mailing Address: _____

City: _____ State: ____ Zip: _____

Category: (Choose a single category from the options below.)

C. Classroom Teacher:

Elementary (K-5)

Middle School (6-8)

Biology

Chemistry

Earth Science

Physics

At-Risk Students (K-12)

Environmental Science

Resource Teacher

Examples: Technology, Science Resource, Etc.

D. **Science Educator** (non K-12)

Examples: Science Supervisor, Informal Education, Etc.

E. **Science Educator** (University/College faculty)

F. **Community Partnership**

Examples: Industry, Business, Politicians, other organizations, etc.

Nominations must be received or postmarked by August 20, 2012

If not done on-line, return all nomination materials to:

Donald Foss, 109 Saint Ives Road, Charlottesville, VA 22911 fossd1@comcast.net



A P P L I C A T I O N
Russ Wayland Mini-Grant for Teachers
Sponsored by the Virginias Section of the
American Institute of Professional Geologists
Applications are due June 1, 2012

In 1993, the Virginia Section AIPG established a grant in order to improve the teaching of GEOLOGY in the schools (K-12), Public and Private. Applicants should type, or print in ink, all sections of the application. and submit it prior to June 1, 2012. The section has allocated \$1,000 to fund approved proposals for 2012.

Applicants must be currently employed as classroom teachers, and must be a member of VAST or WVSTA. Applicants must agree to share the outcomes of this project with other teachers through inservices and/or a presentation at a VAST or WVSTA conference.

Recipients are also expected to share the outcomes of the project with the members of Virginias Section of the AIPG at one of their four yearly meetings.

The review committee is looking for proposals that will result in more hands-on activities, and a better understanding of the importance of geologic resources, and/or geologic principles. The grant may be awarded to one applicant, or split among several applicants (to be determined by the AIPG selection committee). The grant moneys are not intended as remuneration and should not be considered as such. The AIPG selection committee may elect to not make an award if it feels that none of the proposals meet the goals of AIPG.

Name: _____

Home Address: _____

City: _____ State: _____ Zip: _____

Home Phone: (____) _____ Years of Teaching Experiences: _____

School: _____ Grades Taught: _____ No. of Students: _____

School Division: _____ (County/City) Courses Taught: _____

Project Will Involve Developing (check all applicable):

Labs: _____ Field Trips: _____ Guidebooks: _____ Curriculum: _____ Other: _____

Please Provide a **Brief Description** of the Goal(s) / Purpose of the Proposed Project:

On an attached page, with your name and signature, please provide:

- A) A detailed explanation of the project, including expected outcomes;
- B) How many students (and teachers) will benefit;
- C) A timeline (when you will start and expect to finish);
- D) A detailed budget (how you propose to use the moneys);
- E) How you propose to evaluate the expected outcomes.

Signature of Applicant

Date Submitted

Please Submit to: Stan Johnson, 1016 Holmes Ave., Charlottesville, VA 22901

By June 1, 2012 • Awardees Will Be Notified by July 1, 2012

AIPG Evaluators
and Dates:

1) _____

2) _____

3) _____

27.



“Working Together to Promote Quality Science Education”

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

VAST Benefactors



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www.education.jlab.org



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50 Elm Street
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www.eduware.com

Science Museum of Virginia
2500 West Broad Street
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www.smv.org



Delta Education
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www.delta-education.com

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



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www.discoveryeducation.com

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www.vernier.com



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www.fisheredu.com

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

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

Lab-Aids, Inc.
17 Colt Court
RonKonKoma, NY 11779
www.lab-aides.com

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

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

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

“Programs That Work” Awards for Mathematics and Science
The Virginia Mathematics and Science Coalition • Superintendent’s Memo #017-12

The Virginia Mathematics and Science Coalition invites you to nominate effective student and teacher educational programs for the Virginia Mathematics and Science Coalition’s “Programs That Work” Awards.

The Coalition is interested in reviewing and recognizing exemplary mathematics and science programs for which there is evidence of a positive impact on student or teacher learning. Proposals will be evaluated on the extent to which they:

- represent innovative, exemplary programs that have proven effective with all students or teachers;
- demonstrate the important mathematics and science concepts, skills or processes students and teachers learned

as a result of the programs; and if the program is integrated STEM, also demonstrate the integration of science, technology, engineering, and mathematics; and

- document impact on teaching and learning.

Awardees will be recognized on May 22, 2012, at a reception in Richmond. The Coalition will support the travel and lodging of award recipients.

Application requirements and more information can be found at <http://www.vamsc.org/PTW2012.html>.

Applications are due on **April 6, 2012**, and will be evaluated on a competitive basis for programs that have been conducted during the past five years and have demonstrated positive results.

Expedition Chesapeake Launches Essay Contest for Students

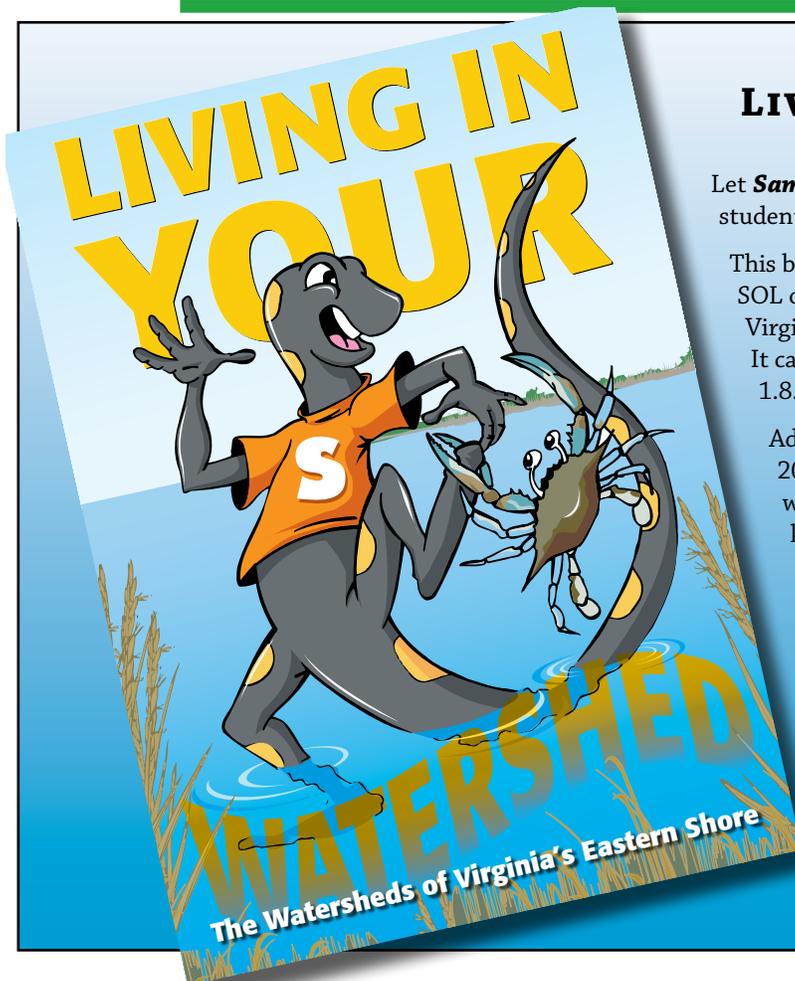
Whitaker Center for Science and the Arts is inviting the winner of a new essay contest to spend a day with international conservationist and educator Jeff Corwin on the set of Expedition Chesapeake during the 2012-2013 school year. Students in 7th and 8th grades who live in Pennsylvania, Maryland, Virginia, New York, West Virginia, Delaware and the District of Columbia are invited to participate in the essay contest and are asked in 500 words or less to discuss their favorite science teacher and how this

teacher has had an impact on his or her learning.

Complete contest rules and requirements are available by e-mailing essaycontest@expeditionchesapeake.org or by calling (717) 234-1295. One winning essay will be chosen by a committee from the Expedition Chesapeake Advisory Panel. The deadline for essay submissions is May 31, and the winning essay will be chosen before June 25.

To see the full essay contest announcement please visit link below:

[http://www.expeditionchesapeake.org/media/ec_press_pdf/Essay Contest Final Release Feb203.pdf](http://www.expeditionchesapeake.org/media/ec_press_pdf/Essay%20Contest%20Final%20Release%20Feb203.pdf)



LIVING IN YOUR WATERSHED

Let **Sammy the Spotted Salamander** guide you and your students to an understanding of your local watersheds.

This booklet is designed specifically for the Grade 4 Science SOL on watersheds and water resources (S.4.9.a), and the Virginia Studies SOL on Virginia geography (VS.2.b & c). It can also be used for other water resources SOLs (K.11; 1.8.b; 2.7 & 8; 3.9; 5.7.f; and 6.5, 6.7 & 6.9).

Adapted to your geographic area, this illustrated, full-color 20-page booklet comes complete with a map of local watersheds. There are sections on defining a watershed, knowing your watershed address, kinds of pollution and things you can do to improve water quality.

Each booklet purchased includes a copy of **Sammy’s Scavenger Hunt**, an illustrated worksheet that has been used successfully in fourth and fifth grade classrooms.

For more information, contact:

Daniel Bowman, Principal
Bowman Environmental Services, L.L.C.
E-mail: BowEnvSer@gmail.com
Phone: 434-978-4093

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 2012-13
- Hotel Registration for the PDI
- PDI Registration Interactive Form
- VAST Nominating Form 2012
- VAST Advertising Form 2012
- VAST Mini-grant Form 2012
- AIPG Geology Award Form 2012

<http://www.vast.com>



Virginia Association of Science Teachers, Inc.

MEMBERSHIP FORM

The VAST dues-year runs from January 2012 to January 2013

Join now! Good through Jan 2013!

VAST Membership Form online: <http://www.vast.org/membershipform.html>

Below you will find several dues options. Renew your membership today. A membership card will be mailed. Members get free admission to the Science Museum of Virginia and VMNH, four issues of *The Science Educator*, and VAST e-blasts to keep you informed. Check the website for more.

New Member Membership Renewal Membership Update (E-mail & address or name changes)

Name (first-last): _____ HOME PHONE: (____) _____

Home Address: _____ E-mail Address _____

Address (city) : _____ State : _____ ZIP: _____

School District (city/county/private) or Company _____

School Name: _____

LEVEL (circle one) : Elementary - Middle - High - College - Supervisor - Business - Full-time Student

SPECIALTY/CERTIFICATION (circle all applicable):

Biology/Life Sci. - Chemistry - Earth Sci. - Elementary - Envi.Sci. - Physics/Physical Sci. -Other

VAST Federal Tax Number - 54-1265890

- | | | | | | |
|--------------------------------|-----------|--------------------------|---|-----------|--------------------------|
| A) One (1) year | \$ 25.00 | <input type="checkbox"/> | B) Three (3) years | \$ 60.00 | <input type="checkbox"/> |
| C) Life Membership | \$ 200.00 | <input type="checkbox"/> | D) FULL-TIME student | \$ 10.00 | <input type="checkbox"/> |
| E) Retired VAST member ... | \$ 10.00 | <input type="checkbox"/> | F) One year Corporate Membership. | \$ 150.00 | <input type="checkbox"/> |
| G) 1 year Corporate Benefactor | \$ 500.00 | <input type="checkbox"/> | H) Voluntary contribution to Eduware "First Timers" | | |
- Awards: Amount: _____

Corporate Benefactors receive a discounts on Advertising (www.VAST.org) for details.

PLEASE RETURN THIS FORM - WITH YOUR PAYMENT TO: Please make checks out to VAST.

Treasurer Jimmy Johnson, 12141 Winns Church Rd, Glen Allen, VA, 23059 • 804-752-7727

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

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Is Your Address Changing?

Be sure to let VAST know your new contact information. Neither the post office or the Internet will forward our newsletters. Please e-mail Maria Cooper, Membership chair: maria.cooper@pps.k12.va.us

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dlayne@mcpweb.org

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



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

Next Deadline for *The Science Educator* for articles, letters to the editor, or labs is:

April 25, 2012.

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

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

VAST newsletter is sent bulk rate, therefore VAST apologizes for any time sensitive information that you may receive late. Please consult the website for up to date information, VAST forms for awards and mini-grants, and current PDI information. www.vast.com



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

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

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

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

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 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!!!