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<http://www.VAST.org>
Check the web for news, conference
updates, registration, and forms.

The Science Educator

Summer 2012

A publication of VAST, The Virginia Association of Science Teachers

Vol. 61, No.1

VAST 2012 Professional Development Institute

Designing Your Way Through Science

November 7-10, 2012

Have you heard the buzz? Members of the VAST Professional Development Institute (PDI) Team and Board members have been planning, organizing, phoning, emailing in a flurry of activity to make sure the PDI 2012 will be the best ever. We have outstanding General Session Speakers, more than a hundred concurrent sessions, workshops, field trips, available graduate college credit, recertification points and more. There is something for everyone whether you teach pre-kindergarten, physics, or pre-service teachers.

In this issue of *The Science Educator* you can find them

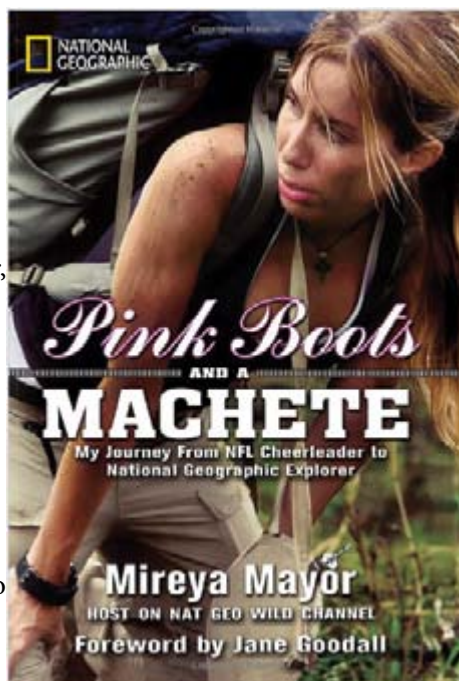
all. Times and locations of concurrent sessions are not set as yet, but titles and description are, to help you plan. By September 1st those details will be on the VAST website (www.VAST.org). We hope you will register today. Save your spot for Thursday workshop(s) or field trip(s) and plan to arrive early. Early Bird Registration for the conference closes on October 12, 2012. Save \$30 or more if you are a presenter. The Williamsburg Hotel and Conference Center group rate for VAST expires on October 17th. Act today and *Design Your Way Through Science* for better teaching and an outstanding professional career. Your professional organization is ready, are you?

Pink Boots and a Machete: Dr. Mireya Mayor Nat Geo Wild Adventurer, Saturday, General Session Speaker

From NFL cheerleader, to mother of two, to global adventurer, Mireya Mayor has done it all. A first-generation Cuban-American National Geographic Explorer who hosts Nat Geo WILD, it seems impossible that Mireya could possibly have the experience, knowledge, desire, and skills to be a global adventurer, author and respected primatologist.

Mireya's book describes many of her hair-raising adventures that include surviving a plane crash, confronting a charging silver-backed gorilla, diving with sharks, and climbing, crawling, hiking into and over some of the most inhospitable locations on earth in order to reach the animals who live there.

Mireya has not only done it all, she strives for excellence in all she pursues. In 2005 she received two Emmy Award nominations for her work on the television series "Ultimate Explorer". National Geographic named



Mireya an "Emerging Explorer" in 2007. You also may have seen Mireya on the History Channel's 8-part series "Expedition Africa: Stanley & Livingstone" in 2009. She was one of the explorers who retrace the nearly 1,000-mile trip of Stanley & Livingstone. Mireya is a Fulbright scholar and a National Science Foundation Fellow with a Ph.D. in anthropology from Stony Brook University.

You can see Mireya on NAT GEO WILD Channel in the series "Wild Nights with Mireya Mayor" and her documentary special "Mystery Gorillas". Better yet come and see her in person at the VAST 2012 PDI in November!

Visit Mireya Mayor's website www.mireyamayor.com

Back To School ~ Teacher To Do List

It is that time of year again when we start thinking about heading back to school. Refreshed from summer vacation, there are so many things floating in our heads. So, I thought I'd turn them into a list for us. Here we go:

1. Remember how to wake up early.
2. Register for the VAST PDI.
3. Convince teacher friends to join me at the PDI.
4. Reserve hotel room.
5. Pop in to say "Hi!" to the Principal.
6. Get cracking on my room.

The list goes on and on . . . but don't forget the important part . . . it is time to register for the PDI! Registration is quick and easy . . . just go to the website, http://education.jlab.org/vast/pdi_registration.php, and fill in the form. Early Bird Registration ends on October 12, 2012 . . . but don't wait that long! You know how busy things get, so register now while you still have time to breathe!

See you in Williamsburg for the 2012 PDI!

Brita Hampton

VAST President- Elect
PDI Chair

1952 - 2012

Help Us Celebrate 60 Years of VAST at This Year's 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.*

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Notice to Members

Due to the positive response we have gotten to the digital versions of the VAST Newsletter, all issues of the newsletter except the Issue 1 (August/ September) will be digital. Watch your e-mail for the notification that the newsletter is ready for download. Click on the link to download the Newsletter. The next issue will be sent about the 10th of October. If you do not receive an e-mail, contact Maria Cooper, Membership Chair to get assistance. (MARIA.COOPER@pps.k12.va.us) Be sure to contact her to change your e-mail and mailing address.

If you have any suggestions or comments please send them to the editor. (VASTeditor@mac.com)

We sincerely hope that you will embrace this change as we will be able to get news to you more quickly and reliably with less strain on the environment. Past and current newsletters will also be found on the VAST web site. Click on the "Publications" tab.

Jean Foss, Editor

From the Executive Director:

If you are reading this now and HAVE NOT...

Registered for the PDI

Registered for Pre-events

Registered for Field Trips

Registered for your Sleeping Room

Then you will be missing the biggest event in Virginia...

So, stop everything...go to your computer and

Register for the PDI

Register for a Pre-event

Register for a Field Trip

Register for a Sleeping Room

And join us, the VAST Family for the biggest event in Virginia...

Susan Booth

BALLOT



The Nominating Committee presents the following slate of officers for election at the VAST Annual Meeting, Saturday, November 10, 2012 at the Williamsburg Hotel. Elected officers will begin their terms January 1, 2013.

Nominating Committee Chair for 2012: Delores Dalton Dunn

For President Elect (2013) This officer will become President in 2014.

Shirley Sybolt Yes No
Science Instructional Leader and 5th Grade Teacher at Cooper Elementary School, Hampton City Schools. National Board Certified Teacher. She currently serves as chair for the VAST Elementary Science Committee.

3 year term—President elect, president, immediate past president

For Vice President (2013-2015)

Julian Barnes Yes No
Science Coordinator Roanoke County Schools
He currently serves as vice-president.

For Director, Region II (2013-2015)

Melissa Brichacek Yes No
Teacher in Chesapeake City Schools
She currently serves as Director, Region II.

For Director, Region IV (2013-2015)

Susan Bardenhagen Yes No
Elementary science teacher in Fairfax County
She currently serves as Director, Region IV.

For Director, Region VI (2013-2015)

Sonja Wolen Yes No
Assistant Director at Danville Science Center, SMV
She currently serves as Director, Region VI.

For Director, Region VIII (2013-2015)

VACANT

Any interested educator should contact nominating committee chair at 804-240-2162

If you will not be present at the Annual Meeting, please cast an absentee ballot.
Deadline for receipt of ballots is November 2, 2012. Return your completed ballot to:
Delores Dalton Dunn, 9078 Cadys Wood Dr., Hanover, VA 23069

VAST Professional Development Institute
Designing Your Way Through Science
Williamsburg Hotel
November 8 – 10, 2012



Thursday

8:30 am - noon	VSELA Program
8:45 am	Virginia Living Museum Rocks and Minerals of VA Workshop plus Tour Fieldtrip departs Williamsburg Hotel
9:00 am-Noon or 3:00 pm	Pre-Conference Institutes sponsored by the Martinson Center for Mathematics and Science
9:10 am	Jamestown and the Tidewater in 17th Century Virginia Fieldtrip departs Williamsburg Hotel
9:15 am	Boat Investigation with the Chesapeake Bay Foundation Fieldtrip departs Williamsburg Hotel
12:00 noon - 1:00 pm	VSELA, Delta, CPO and Martinson Center workshop Lunches
12:30 pm	Hampton's History with John Quarstein Fieldtrip departs Williamsburg Hotel
1:00 pm - 4:00 pm	Pre-Conference Institutes , Sponsored by Delta Education and CPO Science
1:00 pm - 4:00 pm	VSELA Program
2:00 pm - 5:15 pm	VAST Registration Desk Open
5:30 pm - 6:30 pm	<u>General Session One</u> - Kenneth Wesson Next Generation Success: Teaching Students to Think Scientifically , Sponsored by VSELA and Delta Education
6:30 pm - 8:00 pm	VSELA and VAST Reception (Exhibit Hall Open), Sponsored by Virginia Space Grant Consortium
8:30 pm - 9:00 pm	VAST Board of Directors Meeting

Friday

7:00 am - 4:30 pm	VAST Registration Desk Open
7:15 am	Continental Breakfast
8:00 am - 9:00 am	<u>General Session Two</u> - Heidi Schweingruber & Stephen Pruitt From the Framework to Next Generation Science Standards Sponsored by VSELA
9:15 am - 10:05 am	Concurrent Session A
10:00 am - 6:00 pm	Exhibit Hall Open
10:20 am - 11:10 am	Concurrent Session B
11:25 am - 12:15 pm	Concurrent Session C
12:15 pm - 1:15 pm	Visit the Exhibit Hall
12:15 pm - 1:15 pm	Preservice and Student Lunch
1:30 pm - 2:20 pm	Concurrent Session D
2:35 pm - 3:25 pm	Concurrent Session E
3:40 pm - 4:30 pm	Concurrent Session F
4:00 pm - 6:00 pm	Celebration of Science in Exhibit Hall, Sponsored by Delta Education
6:00 pm - 6:30 pm	Ticketed dinner
6:30 pm - 8:00 pm	Awards Presentations – PAEMST awards, VAST awards, VABT awards <u>General Session Three</u> - William Kelso and Adriana Ocampo Exploration Past, Present and Future , Sponsored by NASA
8:00 pm - 10:00 pm	Auction

2012 VAST Professional Development Institute Strands
Designing Your Way Through Science



Saturday

7:00 am - 12:00 pm

Registration desk open

7:15 am

Continental Breakfast

8:00 am - 9:00 am

Concurrent Session G

8:30 am - 12:00 pm

Exhibit Hall Open

9:15 am - 10:05 am

General Session Four - Annual Business Meeting

Greening Schools from the Inside and Out, Sponsored by VRUEC

Jennifer Seydel, Chief Operations Office of the Green Schools

National Network

10:20 am - 11:10 am

Concurrent Session H

11:00 am - 11:45 am

Visit the Exhibit Hall

11:45 am - 12:35 pm

Concurrent Session I

12:50 pm - 1:40 pm

Concurrent Session J

2:00 pm - 3:00 pm

General Session Five - **Door Prizes**

Pink Boots and a Machete, Sponsored by National Geographic Learning

Mireya Mayor, National Geographic Explorer



Virginia Science Education Leadership Association

Advocating for excellence in science curriculum, instruction, and learning for all

VISION STATEMENT:

VSELA's vision is to be the guiding force in science education.

MISSION STATEMENT:

To advocate for excellence in science curriculum, instruction, and learning for all.

The Virginia Science Education Leadership Association (VSELA) was formed to meet a need to develop science education leadership for K-12 school systems. The original name of the organization was the Virginia Science Supervisors Association (VSSA), but this name was changed to the National Science Education Leadership Association (NSLEA) in 1996 to reflect the changing nature of science leaders. VSELA is an affiliate of the National Science Teachers Association (NSTA), the American Association for the Advancement of Science (AAAS) and the International Council of Associations for Science Education (ICASE). At the present time, VSELA has members representing close to 40 school divisions who hold a variety of science education leadership positions including science department heads, supervisors, coordinators, university science and education faculty, administrators, science resource teachers, teacher advocates, elementary science lead teachers and others.

Explore (<http://www.vsela.org>) and we hope that you join as we strive to improve leadership in science education.

Virginia Association of Science Teachers
2012 Professional Development Institute
Thursday, November 8, 2012

VAST Pre-Conference Institutes



Martinson Center for Mathematics & Science Pre-Conference Institute: *Share the Wonder of Science*

Target Audience: Early Childhood, Pre-K and Kindergarten Teachers

Time: 9:00 am - 3:00 pm

Scientists are born in preschool and kindergarten! During this session, we will explore what inquiry looks like in the kindergarten classroom and guess what! It does not have to be hard! You will leave with practical activities and simple experiments. We will explore how to use children's literature to inspire young scientists to not only love science, but love learning! Free materials will be provided. Institute costs \$10 and includes lunch!

Note: *Optional Graduate Credit through Regent University is available for an extra fee (\$200 per credit hour)*

Martinson Center for Mathematics & Science Pre-Conference Institute: *Learn How Science and Literature are a Great Team Through Authors that Love Science!*

Target Audience: Teachers of Grades 1 - 5

Time: 9:00 am - noon

Make learning science fun and interesting with fantastic books by fantastic authors. Participants will explore the works of several authors known for their ability to make scientific concepts both interesting and easy to understand. Come and learn how to use reading and writing activities to teach basic concepts in life science, earth science, and physical science. Participants will also learn various reading strategies and other ways to integrate science and reading. Materials will be provided. Institute costs \$10 and includes lunch!

Note: *Optional Graduate Credit through Regent University is available for an extra fee (\$200 per credit hour)*

Pre-Conference Institutes are open to registered VAST PDI attendees.

To register for the VAST PDI and the Martinson Center Workshops, please visit www.vast.org today

*Note: Lunch is at noon; Only one lunch per participant!

VAST Pre-Conference Institutes



Noon - Lunch

FOSS/Delta Education/CPO Science Pre-Conference Institutes

Williamsburg, Virginia – Thursday, November 8, 2012

FOSS Elementary Institute:

The Science-Centered Classroom



Target Audience: Teachers of Grades 1 - 5

Time: 1:00 pm – 4:00 pm

With so much to cover and so little time during the school day, making connections across the curriculum is no longer an option, but a necessity. In this institute, learn strategies and scaffolds for each of the domains of reading to authentically support hands-on investigations and content learning. Identify SOL Math concepts that students can learn and practice in tandem with understanding science concepts and experience STEM and Environmental activities, too. Materials provided for all participants. Cost \$10 and includes lunch!

FOSS Middle School Institute:

Raising Rigor through Inquiry and Literacy



Target Audience: Teachers of Grades 6 - 8

Time: 1:00 pm – 4:00 pm

Preparing the next generation of citizens and scientists to meet the needs of the 21st Century, requires students to go beyond memorization of science facts and to view science as a way of thinking and solving problems. The FOSS Middle School Program features inquiry-based investigations and opportunities for asking questions and solving problems using the scientific processes. In this institute, participants engage in hands-on investigations as well as learn easy to use strategies and scaffolds for incorporating literacy into the science classroom. Materials provided for all participants. Cost \$10 and includes lunch!

CPO High School Institute:

STEM Principals and the Engineering Cycle Using the CPO Science STEM Wind Turbine Kit



Target Audience: Teachers of Grades 6 - 12

Time: 1:00 pm – 4:00 pm

Explore how electricity and magnetism are related through hands-on experiences. Apply your knowledge by engineering a wind turbine using the new CPO Science STEM Turbine Kit. Build, test, and revise your model by changing variables using interchangeable parts so that it generates as much power as possible. You'll even design, construct, incorporate, and test your own parts for the turbine to maximize power output. Take away STEM activities and an understanding of how to apply the Engineering Cycle in science classes. Cost \$10 and includes lunch!

Pre-Conference Institutes are open to registered VAST PDI attendees.

To register for the VAST PDI and the FOSS and CPO Institutes, please visit www.vast.org today

6:30 p.m. Visit the Delta Education booth in the VAST Exhibit Hall

- Featuring NEW FOSS, Third edition and FOSSWEB Interactive Whiteboard Demonstrations
- Engaging hands-on science activities and STEM Resources
- 7. • Content area reading aligned to the Virginia Science Standards of Learning

Virginia Association of Science Teachers
2012 Professional Development Institute

PDI Field Trips
Thursday November 8, 2012

Register today for field trips which will be held at the Williamsburg VAST PDI this fall. These trips are on Thursday to make it possible for you to attend and not miss out on any of the General Sessions speakers or the Concurrent Sessions held on Friday and Saturday. These field trips are designed to provide resources and enrichment for you and, through you, your students. Plan ahead and register online early since places are limited.



Virginia Living Museum



Mineral Class Participant



Four Specimens of Amazonite

VLM Photos

Virginia Living Museum Rocks and Minerals of Virginia Workshop Plus Tour



Time: 9:30 – 1:00 (depart 8:45 – return 1:45)

Maximum Number of Participants: 30

Explore Virginia's underground world of rocks and minerals while learning effective ways to make mineralogy concepts fun and memorable for your students. Using real rock, gem and mineral specimens from the museum's collections, teachers in this inquiry-based and highly interactive workshop will learn and practice student-friendly methods of performing mineral identification lab tests, and learn effective techniques for teaching and reinforcing rock cycle concepts. We'll also demonstrate some surprising ways that minerals are used to manufacture everyday materials. In addition to plenty of classroom activities, teachers will take away a collection of rock and mineral samples to use in their own classrooms.

Note: lunch is not provided; a cafeteria is available in the museum



Jamestown Photo

Jamestown and the Tidewater in 17th Century Virginia

Time: 9:30 -12:00 (depart 9:10 – return 12:20)

Maximum Number of Participants: 20

Learn how the environment of 17th century Virginia impacted the experience of the Jamestown settlers, Powhatan Indians and Africans. In a two-hour walking tour you will scrape a deer hide to learn about brain-tanning methods used by the Powhatan Indians, make cordage from plant fibers, try out 17th century navigational tools on the ships, and discover the role played by drought, dysentery and matchlock muskets in the early settlement of Virginia. Dress appropriately for the weather – we will be walking outdoors for most of the tour. Bring your camera to capture photos along the way!

Note: lunch is not provided

2012 VAST PDI Field Trips – Thursday, November 8, 2012



CBF photo

Boat Investigation with the Chesapeake Bay Foundation

Time: 10:00-4:00 (depart 9:15 – return 4:45)

Maximum Number of Participants: 25

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

Note: participants will need to provide their own lunch.



The battle between the Monitor and the Merrimack



John V. Quarstein is an award-winning historian, preservationist, and author. John has served as the director of the Virginia War Museum since 1978.

Hampton's History with John Quarstein

Time: 1:00 – 4:00 (depart 12:30 – return 4:30)

Maximum Number of Participants: 25

Explore Fort Monroe, Monitor-Merrimack Overlook, Lee's Mill and Lee Hall Mansion. These sites will give participants a nice overview of the 1862 Peninsula Campaign. This campaign features tremendous planning, introduction of new technologies, leadership, and decisive battles. The Union could have ended the Civil War, instead, due a failure in leadership, the war would continue on for three more bloody years and change the nation forever.

General Session Speakers

Dr. Kenneth Wesson

General Session I

Next Generation Success: Teaching Students to Think Scientifically

Thursday, November 8, 2012 at 5:30 pm

Delta Education will sponsor featured speaker, Kenneth Wesson, who works as an educational consultant for preschool through university institutions and organizations. An expert on the neuroscience of learning and methods for creating classrooms and learning environments that are “brain considerate,” Wesson regularly addresses educational organizations and institutions. His work is frequently referenced in *Parents Magazine* and the journal, *Brain World*. Wesson regularly addresses counseling associations, school districts and parenting organizations on establishing “brain-considerate” learning environments across the country. Recently, Kenneth was a keynote speaker at the 2012 NSTA STEM Forum and Expo.

“If it’s your job to develop the mind, shouldn’t you know how the brain works?” is the basic premise of Wesson’s research, speeches and workshops.” - Dr. Kenneth Wesson

(Courtesy of Delta Education)

Dr. Heidi Schweingruber and Dr. Stephen Pruitt

General Session II

From the Framework to Next Generation Science Standards

Friday, November 9, 2012 at 8:00 AM

VSELA will sponsor a featured presentation on the development and implementation of the new K–12 science standards. Panelists are: Dr. Heidi Schweingruber, co-director of the Committee on a Conceptual Framework for New K–12 Science Education Standards at the Board on Science Education at the National Academy of Sciences; Dr. Stephen Pruitt, coordinator of the work of the states to write the standards (based on the Conceptual Framework) at Achieve, Inc.

(Courtesy of Virginia Science Education Leadership Association)
VSELA



National Science Education Leaders

*Panelists Heidi Schweingruber and Stephen Pruitt.
How will the new national K-12 Science Standards be
developed and implemented?*



William Kelso and Adrianna Campo

General Session III

Exploration Past, Present and Future

Friday evening Nov. 9, 2012, at 6:30 PM

Speaker 1: William Kelso

Explorers of the Past:

Discovery and Founding of Jamestown

William Kelso, Virginia archeologist, has served as director of field archeology for Historic Jamestowne, Colonial Williamsburg, Monticello, Carter's Grove and Poplar Forest. In 1994 Kelso began excavating Jamestown Island which resulted in the rediscovered the 1607 James Fort, long been believed to have washed away in the James River. He also served as commissioner of archeology for the Virginia Historic Landmarks Commission.



This year Kelso received one of Britain's highest awards. He was named an Honorary Commander of the Order of the British Empire for his work at James Towne and James Fort.

Kelso will bring us up to date on his work exploring the past and revealing its significant stories.

Speaker 2: Adriana C. Ocampo

Explorers of the Present and Future:

Exploration of Mars and Beyond

Adriana Campo will discuss current NASA missions, including human and robotic exploration plans for the future. Learn how Adriana's research provided evidence that the extinction of the dinosaurs was related to an asteroid impact. Her research led to the discovery of the Chicxulub impact crater. Scientists now believe that the impact that formed this crater caused the extinction of more than 50% of the Earth's species, including the dinosaurs. She will also talk about current NASA missions, especially the Mars Science Lab, and highlight plans for future space exploration.



(General Session III Speakers Sponsored by NASA)



Jennifer Seydel General Session IV

The Greening of Schools from the Inside and Out

Saturday Morning, Nov. 10, 2012 at 9:15 AM

Teachers and leaders across the country are greening their schools from the inside out through collaborative efforts to create healthy learning environments, reduce their carbon footprint and increase environmental and science literacy. Through the use of video clips and slides, Jenny will share the excitement and results of teachers and leaders from across the country that use local case studies with an environmental focus to breathe life into their curriculum while raising test scores.

Jennifer Seydel brings over 30 years of experience as an educator to her role as Chief Operations Officer of the Green Schools National Network. GSNN is nationally recognized as the premier partner in advancing collaboration to integrate a green and healthy culture in schools to ensure that current and future generation of students are environmentally literate as well as practice and promote sustainability in their community. She is also School Designer for Expeditionary Learning, a non-profit education reform organization that partners with existing schools and opens new schools with the goal of preparing children and youth for success in an ever changing world. Expeditionary Learning includes 165 schools who serve over 40,000 students and 4000 teachers in 29 states. Jennifer consults with the growing number of green schools within the EL network.

(Sponsored by the **Resource Use Education Council**)



Mireya Mayor

General Session V

Pink Boots and a Machete

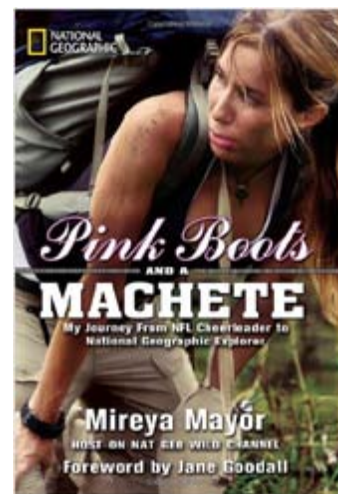
Saturday Afternoon, Nov. 10, 2012 at 2:00 PM

From NFL cheerleader, to mother of two, to global adventurer, Mireya Mayor has done it all. A first-generation Cuban-American National Geographic Explorer who hosts NAT GEO WILD Channel, it seems impossible that Mireya could possibly have the experience, knowledge, desire, and skills to be a global adventurer, author and respected primatologist.

Mireya's book describes many of her hair-raising adventures that include surviving a plane crash, confronting a charging silver-backed gorilla, diving with sharks, and climbing, crawling, hiking into and over some of the most inhospitable locations on earth in order to reach the animals who live there.

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You can see Mireya on NAT GEO WILD Channel in the series "Wild Nights with Mireya Mayor" and her documentary special "Mystery Gorillas". Better yet come and see her in person at the VAST 2012 PDI in November!



(Sponsored by National Geographic Learning/ Cengage Learning)



The Presidential Awards for Excellence in Mathematics and Science Teaching



Jacqueline Curley

Sterling, VA - Science

The Presidential Awards for Excellence in Mathematics and Science Teaching, as the highest K-12 teaching award a teacher could ever hope to achieve, is an incredible honor to the recipient. It represents an acknowledgment of exemplary teaching. While it recognizes these teachers and their teaching skills on a national scale, it also credits all of the students and mentors that these great teachers have learned from in order to succeed at this level.

For the past 7 years, Jackie Curley has taught Integrated Science Nine (for freshmen) and Independent Research (for juniors and seniors) at the Loudoun County Academy of Science. In Integrated Science Nine, physics, chemistry, and earth science are taught in an integrated, inquiry style. For Independent Research, each junior and senior is mentored in a research project of their own design. Jackie spent the previous 14 years teaching Biology, Anatomy and Physiology, and Advanced Placement (AP) Biology at Oakton High School in Vienna, VA.

In addition to her teaching responsibilities, Jackie serves as the Director of Research for the Academy and mentors new teachers. For Loudoun County, she coordinates the Wolbachia research project. She is also a book reviewer for the American Association for the Advancement of Science. She is a member of the National Association of Biology Teachers (NABT) and was the state NABT Outstanding Biology Teacher awardee for 2008. Jackie has also served as an AP Biology Reader. In her spare time, she enjoys volunteering in the lab with Dr. Geraldine Grant at George Mason University.

Jackie has a B.S. in nutritional studies from the University of Connecticut and an M.S.Ed. from George Mason University. She is certified in biology and chemistry in the State of Virginia.

Go to: https://www.paemst.org/award_process/view for more informtion.

We Could Not Do It Without Our Sponsors



We could not put on our PDI without our sponsors! They continue to go above and beyond to help us make our PDI the best it can be. Thank you to our sponsors: **Delta Science, VSELA, NASA, VRUEC, Virginia Space Grant, and National Geographic Learning, Regent University, and Vernier!** Thank you Sponsors, for your continued support of science education in the state of Virginia! And a special thank you to **Dominion** for their overall support of our VAST speaker presentations! Thank you Sponsors, for your continued support of science education in the state of Virginia!

So, as you can see, Members, we have a terrific line up of speakers. Make sure you mark your calendars now for the 2012 VAST PDI ~ November 7 – 10, in Williamsburg! You won't want to miss a single minute of it!



Register Early for Your PDI Hotel Room VAST 2012 PDI @ Williamsburg Hotel November 7-10, 2012 VAST 2012 PDI Hotel Accommodations :

FREE
Wi-Fi in hotel
rooms & meeting
spaces!

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 • Group rate cut-off date: October 17, 2012

VAST Website for
Up-to-date PDI
Information

To Register: Visit the website www.thewilliamsburghotelcccom, put in the group arrival dates and click "Book Now." The group code to enter is 368973.

You may also make reservations by calling 757-220-2500 and ask for the Virginia Association of Science Teachers discount.

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.

Join all of our exhibitors in the exhibit hall for a

Celebration of Science

Friday, November 9

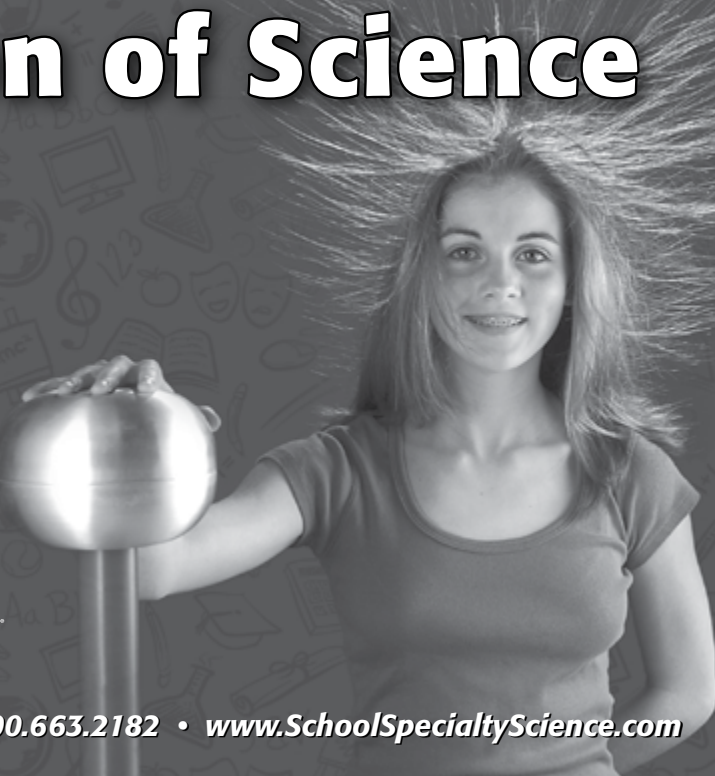
4:00–6:00 PM

**Celebrate VAST's 60th Anniversary
with special activities and door
prizes in the exhibit hall.**

School Specialty Science congratulates VAST on
60 Years of promoting Science Education in Virginia



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NCLB Waiver Approved by US Department of Education

Does Away with Complex and Unrealistic “AYP” Objectives



In February, the Virginia Board of Education approved a NCLB Waiver Application Flexibility Plan and submitted it to U.S. Department of Education. The 10-year-old federal No Child Left Behind (NCLB) law had resulted in the misidentification as failing some Virginia schools that are successful and improving. On June 29, 2012, Superintendent of Public Instruction Patricia I. Wright announced that Virginia schools and school divisions will no longer have to meet arbitrary and unrealistic No Child Left Behind (NCLB) benchmarks in reading and mathematics or the federal law's mandate that all students — regardless of circumstance — achieve grade-level proficiency by 2014. The flexibility is the result of United States Secretary of Education Arne Duncan's decision today to approve the Virginia Board of Education's application for a waiver from certain provisions of NCLB.

“Virginia schools and school divisions can now focus their energy and resources on implementing the state Board of Education's rigorous new content standards and assessments without contending with outdated and often counter-productive federal requirements and rules,” Wright said. “The commonwealth will continue to hold schools accountable for closing achievement gaps but schools won't be subject to a system of increasingly unrealistic annual objectives.”

The waiver allows the state Board of Education to establish challenging but attainable goals for increasing overall student achievement and the achievement of students in demographic subgroups. Annual benchmarks will be set with the goal of reducing the failure rate in reading and mathematics by 50 percent — overall and of each student subgroup — within six years. In contrast, NCLB, as passed by Congress in 2001, requires all students — regardless of circumstance, disability or current achievement level — to demonstrate grade-level proficiency in reading and mathematics by 2014.

The Virginia Department of Education (VDOE) will continue to report — as it has since 1999 under the Standards of Learning (SOL) program — annual school accreditation ratings in September based on overall achievement in English, mathematics, science and history and high school graduation and completion.

“The waiver allows school divisions to focus their Title I funds on measures and strategies that have been shown over time to be effective in raising student achievement,” Wright said.

http://www.doe.virginia.gov/news/news_releases/2012/feb23.shtml

http://www.doe.virginia.gov/news/news_releases/2012/jun29.shtml

Dr. Ertle Thompson, 1929 - 2012

Ertle Thompson, Professor Emeritus at the University of Virginia and former Curry School professor of science education, passed away on June 5, 2012, in Charlottesville. He retired from UVA's Curry School in 2001 after decades of dedicated service to the field of science education.

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



Dr. Thompson addressed the VAST Conference in 1992 at VAST's Fiftieth Anniversary.

science education at the University of Virginia, the State of Virginia and the national level.

He was born on March 30, 1929, in a small farmhouse in Feds Creek, Kentucky, the son of the late Benjamin Harrison Thompson and Bertha Rowe Thompson. After completing his undergraduate studies at the University of Kentucky, he began his teaching career in Southwest Virginia. Teaching science quickly became his life's passion, and he moved his family to Charlottesville in 1957 to continue

his graduate studies, earning both his Master's and Doctorate degrees in Science Education from the University of Virginia.

Ertle Thompson (M.Ed. '58, Ed.D. '67)

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Catherine Webb, Alumna
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*Source: www.usnews.com/education/online-education.

New from Delta Education

FOSS Planetary Science, Second Edition

The revised FOSS Planetary Science course draws from the original course's rich, active-learning investigations to develop a historical sense of humankind's exploration of the cosmos, then delves in far greater depth into the modern questions surrounding space exploration.

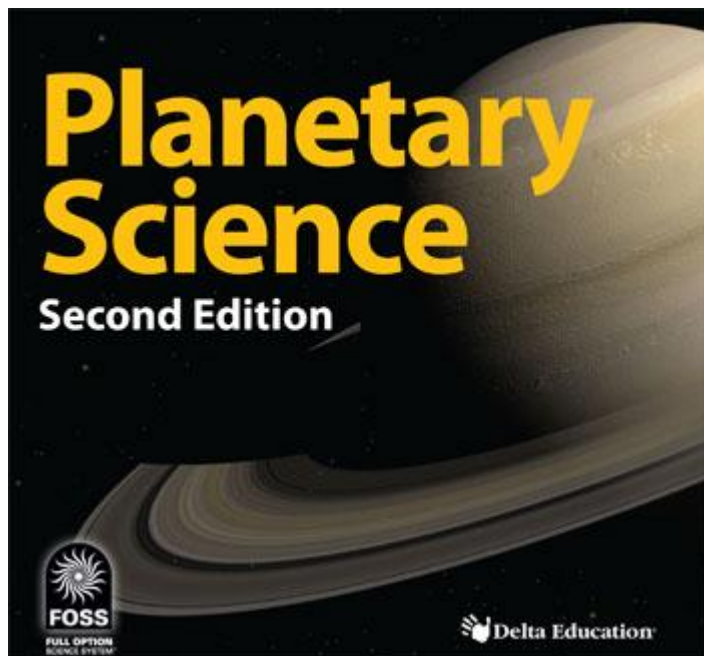
The study of the relationship between Earth, Sun, and the Moon is expanded so that students develop a more thorough understanding of the local cosmos, including the organization of the solar system and the reason for the seasons.

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- Investigation 10: Orbits and New Worlds



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George Dewey

Meditations on Beethoven's *Missa Solemnis*

Wind in the Pines

Is it true that the wind
streaming especially in fall
through the pines
is saying nothing, nothing at all,

or is it just that I don't yet know the language?

— Mary Oliver

In Your Hands

The dog, the donkey, surely they know
they are alive.

Who would argue otherwise?

But now, after years of consideration,
I am getting beyond that.

What about the sunflowers? What about
the tulips, and the pines?

Listen, all you have to do is start and
there'll be no stopping.
What about mountains? What about water
slipping over the rocks?

And, speaking of stones, what about
the little ones you can
hold in your hands, their heartbeats
so secret, so hidden it may take years

before, finally, you hear them?

— Mary Oliver



A page from Beethoven's original manuscript:
"What about mountains?"

As enduring as the Himalayas, though about four hundred thousand times younger, Ludwig van Beethoven's majestic masterpiece, *Missa Solemnis*, rises above most of the choral repertoire of his day, and some would maintain in the 190 years since it was written, as breath-taking and challenging today as when he wrote it.

The guide and interpreter on our week's total immersion, Craig Hella Johnson, founder and Artistic Director of the Grammy Award-Nominated choral ensemble Conspirare, likened the song, as he called it, to Mt. Everest: we approach in awe and wonder to begin our ascent to the summit. Over 200 of us chorister-climbers had come to the Berkshire Choral Festival from Japan, Singapore, Korea, Alberta, and over a dozen states to accept the demands of the composer and attempt to create something which transcended the limits of space and time, despite our doubts and fears of inadequacy.

With the musical tools available to singers, soloists, and instrumentalists, something beyond the printed notes and text was to emerge from over 1900 bars of music. Simultaneously we were to focus our minds, our instruments, and our hearts on matters of pitch, vowel, rhythm, and dynamics in ways few of us had experienced with such intensity. Beethoven's Himalayan creation incorporates a variety of styles and modes from Palestrina

to Bach, Handel, and Mozart resulting, as one historian put it, in “prose-like declamation and rhythmic irregularities.” The discipline and the attentiveness this required would challenge us whether in two-octave ranges and great leaps for a singer or the tempi and density of lines for the contrabassoon. In double fugue, syncopation, or sudden shifts from *sforzando* to *piano* the demands of gravity and pacing were there for us as for the climber on the mountainside. Exhilaration and exhaustion combined to energize us along this 90-minute journey of discovery and devotion. As Beethoven had written to Cardinal Rudolph von Hapsburg, Archduke of Austria, his foremost patron: “Vom Herten, möge es wieder, zu Herten gehn!” [Arising in the heart, may it return to the heart.] Later, to J.A. Streicher, he wrote, “My primary goal in composing the grand *Mass* was to awaken and permanently instill religious feelings in both the singers and listeners.”

In a sense, Beethoven was not a particularly religious man, but he was deeply spiritual. At its root, *religio* means to bind together in one sheaf. Here was assembled a diverse mass of singers and instrumentalists who were bound together in the language of music which speaks across time and belief. The message is both communal and universal. In spite of what our interpreter referred to as today’s “iPod shuffle attention span,” we were all of us in the business of making a discovery where there is beauty in the structure of music as well as in its melody. This we were to communicate with clarity to our audience. Harmonies flow as wind through the pines, or water over the stones in a brook. Much of Beethoven’s gift comes from another realm; as our conductor commented, “no one on earth is supposed to sing like this!” a phrase with which we often agreed. Nevertheless, everything in the texture of the music needs to be heard; we were not to simply read the music, but to interact with it and with the intent of the composer. Using Beethoven’s word, *Andacht*, we were to approach this language of sound and structure with *devotion*.

Mary Oliver’s two poems urge us to approach the languages of nature in the same way: *mit Andacht*. For, after years of consideration, our task is to engage and to listen more deeply whether to wind streaming through pines or the song of little stones. In this iPod shuffle world, we are both buried by and addicted to the sounds and information we create, yet we allow ourselves so little time to deeply listen *mit Andacht* to the more subtle melodies around and within us. As Oliver asks, do these say nothing at all to us, or do we not yet understand the language? Both composer and poet are endeavoring to tell us something about ourselves: when we listen, we shall hear; when we hear, we shall listen.

Beethoven senses both the frustration and the promise in this point when his music typically leaps between fortissimo and pianissimo as though raging with the tempest and then acknowledging the peace of the aftermath: the storm is over, the cycle of renewal has begun. Once we struggle to scale the mountain heights, then our vision enlarges beyond our limited horizon-distractions. Daniel Barenboim, the famous pianist and conductor, could have been speaking of language or learning as much as about music when he remarked, “...a piece of music...it’s not about being, but about becoming.”

In our hands are eternal themes: the music of all energy and matter.

Such commentaries from the hearts of composer and poet invite comparisons to learning and education. The solitary endeavor which is learning in the most personal sense, or the broader and more formal structure which we term “education” uses similar approaches, even the vocabulary is familiar. Many have been the efforts over the years to analyze Beethoven’s music and the purpose of education; we continually seek structures we can comprehend so we can help others to learn and understand. We do not require Everest to challenge us, for every hill and valley possesses a challenge to some learners and we continually seek what is beyond the text to engage a learner to focus both intellect and heart in the process. Pacing (rhythm), language (vowels and consonants), intensity (dynamics), and delivery (tone) each play essential roles in the learning process. Education is as communal and universal as it is personal. Another similarity: the first complete performance of *Missa Solemnis* occurred in 1824 in St. Petersburg; Beethoven had devoted more time and energy to this masterpiece than to any other composition, yet he never heard it – the complete work was first presented to a German-speaking audience three years after he died. How similar to the work and efforts of a teacher toward students whose future she never sees.

Our students come with doubts and fears of inadequacy, but the mountain remains; learning (individualized education) is also both communal and universal and it is we as teacher, guide and interpreter, who must help our students to transcend the limits of space and time in a way that only a participant, not a spectator, can do. Amid the cacophony of enticing and distracting sounds and images, even an IMAX presentation bears no comparison to the child within us all, taking his first personal steps on the mountainside. The language of education, like the language of music, is essentially religious in nature, binding us all together in one sheaf. Barenboim says it best: “Beethoven’s music is

universal...no matter where in the world – it speaks to all people.”

There was a thoughtful article in ASCD’s July *Education Update*, entitled, What is the Purpose of Education? ¹ in which Jonathan Cohen (president of the National School Climate Center) put forth his take on this perennial and curiously unanswerable question. In his view, “the purpose of education is to support children in developing the skills, the knowledge, and the disposition that will allow them to be responsible, contributing members of their community... Meaning, to be a good friend, to be a good mate, to be able to work, and to contribute to the well-being of the community.” James Harvey, senior fellow at the Center on Reinventing Public Education adds, “Schools have always been about developing students for life and work – and life is much more than earning a living; it is also living a life.” Enter Beethoven’s music and Mary Oliver’s poetry. With all our analyses and sophistication, learning remains a solitary adventure of personal discovery and application where a teacher/guide may help train our voices or point the way. Perhaps true education transcends the lines on a page whether in rhythm or meter, just as the flow of music or phrases places heavy demands upon us to listen with our heart as well as with our mind. No wonder “courage” and “heart” have similar etymologies.

Here is what John Dewey had to say almost eighty years ago:

The purpose of education has always been to everyone, in essence, the same – to give the young the things they need in order to develop in an orderly, sequential way into members of society. This was the purpose of the education given to a little aboriginal in the Australian bush before the coming of the white man. It was the purpose of the education of youth in the golden age of Athens. It is the purpose of education today, whether this education goes on in a one-room school in the mountains of Tennessee or in the most advanced, progressive school in a radical community. But to develop into a member of society in the Australian bush had nothing in common with developing into a member of society in ancient Greece, and still less with what is needed today. Any education is, in its forms and methods, an outgrowth of the needs of the society in which it exists. ²

Perhaps it is our lack of agreement on what the needs of our society are today that makes education and the learning it is supposed to encourage so difficult to define and to confine. Perhaps our problem lies in trying to confine it. Harvey concludes, “The most significant skill [young people] can develop in the 21st Century is the same skill that served

them well in prior centuries: a mind equipped to think, the most important work skill of them all.” Instead, we get bogged down by other agendas: job training, competitiveness, uniformity in pacing, uniformity in assessments, and accountability. In these reflections on the purposes of education across 78 years, we still see a focus on learning and character and creativity to fulfill our social mission.

The mountains still remain and beckon to us, the score invites us to play our instruments beyond our perceived capacity, the poem asks that we listen more deeply. Our conductor urged us to “always make music a part of your life and your life will become your music,” – always a process of discovery, but you must enter the river of sound. Mary Oliver asks, “What about [listening to] the sunflowers?” What about deeply listening to those in our classroom, each face a human sunflower?

“Or is it just that I don’t yet know the language?”

Credits: Special thanks to Craig Hella Johnson for his enlightened comments during rehearsal times for Beethoven’s *Missa Solemnis*.

1. *Education Update*, 54(7), July 2012, pp 2-5.
2. Dewey, John, “Individual Psychology and Education,” *The Philosopher*, 12, 1934.
3. *Missa Solemnis* Music http://www.lvbeethoven.com/Oeuvres_Presentation/Presentation-Mass-MissaSolemnis.html

George

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

2012 American Chestnut Summit October 19-21, Asheville, North Carolina

Did you participate in the **4-H American Chestnut Project**, <http://cnre.vt.edu/forsite/chestnut/index.htm> ? You may be interested in attending and **American Chestnut Summit**. The link to the conference information is <http://www.acf.org/summit/>. This event will feature an inspiring array of presentations, workshops and hands-on experiences. Presented by The American Chestnut Foundation® and the USDA Forest Service.

VAST Proudly announces support from the Tidewater Alliance of Chemistry Teachers.

TACT Mini-grant to Enhance Chemistry Learning

Applications will be accepted beginning in 2013

The Tidewater Alliance of Chemistry Teachers (TACT) was founded in 1975 and it actively served the needs of area chemistry teachers for 37 years. When it ceased to exist in 2012, the organization made an endowment to VAST with the stipulation that the monies would continue to be used to promote the teaching of chemistry within Virginia. This mini-grant offering is funded by their generous endowment.

The purpose of the TACT Mini-grant is to provide seed money for innovative curriculum activities which expand chemistry learning opportunities for 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 2013), must have taught (K-12) for a minimum of three years, and must be currently employed as a teacher.

Recipients will be selected by a committee appointed by the VAST President. The committee will be looking for projects that will directly impact chemistry learning (K-12). The committee will also evaluate the originality, creativity and cost effectiveness of the proposals. One, or more, grants totaling \$1,500 will be awarded annually. Ideally, the projects that are funded will provide the students with new experiences and make possible new scientific investigations. Proposals that include student hands-on activities are preferred. Preference will be given to persons who have not received prior TACT Mini-grant awards. The selection committee may elect to not make an award if the proposals do not meet the stated criteria.

Mini-grant funds may be spent for supplies, equipment, printing, and other materials essential to the project. Mini-grant funds may be used for student travel, as long as less than 50% of the grant is designated for this purpose. Funds may not be used 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 activity, the Project Director is responsible for submitting the following by June 10, 2014:

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

WE ANTICIPATE THAT THE APPLICATION FORMS
WILL BE ON THE VAST WEB PAGE ON OR BEFORE JANUARY 1, 2013



How Many Discoveries Can You Make in a Month?

By Dr. Tony Phillips

Artist's concepts such as this one are based on infrared spectrometer data from NASA's Spitzer Space Telescope. This rendering depicts a quadruple-star system called HD 98800. The system is approximately 10 million years old and is located 150 light-years away in the constellation Crater. Credit: NASA/JPL-Caltech/T. Pyle (SSC)

This year NASA has announced the discovery of 11 planetary systems hosting 26 planets; a gigantic cluster of galaxies known as "El Gordo;" a star exploding 9 billion light years away; alien matter stealing into the solar system; massive bullets of plasma racing out of the galactic center; and hundreds of unknown objects emitting high-energy photons at the edge of the electromagnetic spectrum.

That was just January.

Within NASA's Science Mission Directorate, the Astrophysics Division produces such a list nearly every month. Indeed, at this very moment, data is pouring in from dozens of spacecraft and orbiting observatories.

"The Hubble, Spitzer, Chandra, and Fermi space telescopes continue to make groundbreaking discoveries on an almost daily basis," says NASA Administrator Charlie Bolden ¹.

NASA astrophysicists and their colleagues conduct an ambitious research program stretching from the edge of the solar system to the edge of the observable Universe. Their work is guided in large part by the National Research Council's Decadal Survey of Astronomy and Astrophysics, which identified the following priorities:

- Finding new planets—and possibly new life—around other stars.

- Discovering the nature of dark energy and dark matter.

- Understanding how stars and galaxies have evolved since the Big Bang.

- Studying exotic physics in extreme places like black holes.

Observing time on Hubble and the other "Great Observatories" is allocated accordingly.

Smaller missions are important, too: The Kepler spacecraft, which is only "medium-sized" by NASA standards, has single-handedly identified more than 2300 planet candidates. Recent finds include planets with double suns, massive "super-Earths" and "hot

Jupiters," and a miniature solar system. It seems to be only a matter of time before Kepler locates an Earth-sized world in the Goldilocks zone of its parent star, just right for life.

A future astrophysics mission, the James Webb Space Telescope, will be able to study the atmospheres of many of the worlds Kepler is discovering now. The telescope's spectrometers can reveal the chemistry of distant exoplanets, offering clues to their climate, cloud cover, and possibilities for life.

That's not the telescope's prime mission, though. With a primary mirror almost 3 times as wide as Hubble's, and a special sensitivity to penetrating infrared radiation, Webb is designed to look into the most distant recesses of the universe to see how the first stars and galaxies formed after the Big Bang. It is, in short, a Genesis Machine.

Says Bolden, "We're on track in the construction of the James Webb Space Telescope, the most sophisticated science telescope ever constructed to help us reveal the mysteries of the cosmos in ways never before possible." Liftoff is currently scheduled for 2018.

How long will the list of discoveries be in January of that year? Stay tuned for Astrophysics.

For more on NASA's astrophysics missions, check out <http://science.nasa.gov/astrophysics/>. Kids can get some of their mind-boggling astrophysics questions answered by resident Space Place astrophysicist "Dr. Marc" at <http://spaceplace.nasa.gov/dr-marc-space>.

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

¹ Bolden made these statements in an April 20th editorial he co-authored with John Holdren, Director of the Office of Science and Technology Policy: http://blogs.nasa.gov/cm/blog/bolden/posts/post_1334967201693.html

**GOOD
NEWS!**

ExploraVision is now more aligned with the **National Research Council** Framework for K-12 Science Education!



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Early Copy

Check VAST Web-site for most current listings with times and rooms,

Virginia Association of Science Teachers 2012 Professional Development Institute November 7-10, 2012

Concurrent Sessions

Sessions are listed here by PDI Strand. We want you to know that the sessions this year are as diverse in scope and high in quality as ever. There truly is something for everyone. By September 1st, the sessions will also be online on the VAST website (www.vast.org). Online the dates, times and rooms for sessions will also be available. Happy browsing!!

Applications of Science Strand

Comparative Vertebrate Anatomy Featuring Carolina's Perfect Solution

Applications of Science

Biology/Life Science

Explore animal diversity by comparing and contrasting the anatomical adaptations of the pig, rat, perch, and frog. Participants use hands-on dissection to identify the characteristics of these popular vertebrates. This is an excellent comparative dissection activity featuring Carolina's Perfect Solution® specimens. Free dissection supplies and great door prizes. Explore animal diversity by comparing and contrasting the anatomical adaptations of the pig, rat, perch, and frog. Participants use hands-on dissection to identify the characteristics of these popular vertebrates. This is an excellent comparative dissection activity featuring Carolina's Perfect Solution® specimens. Free dissection supplies and great door prizes.

Carolina Teaching Partners, Carolina Biological Supply Company

Conservation of the Canebrake Rattlesnake in Virginia

Applications of Science

Biology/Life Science

The Canebrake Rattlesnake (*Crotalus horridus*) Coastal Plain population is listed as State Endangered in Virginia, USA. The Coastal Plain population of this species reaches the northern limit of its range in the heavily urbanized region of southeastern Virginia known as Hampton Roads. Approximately 1.6 million people live within 30 kilometers of all known populations. The primary causes of its decline have been habitat loss and human persecution.

John (JD) Kleopfer, Virginia Department of Game and Inland Fisheries

Effective use of Computer Simulations in Biology

Applications of Science

Biology/Life Science

Incorporating simulations is a great way to enhance biology/life science teaching and learning. In this session, we introduce and model best practices for using computer simulations effectively and appropriately in biology and life science classes. Learn how to incorporate process skills, nature of science, and content knowledge through the use of simulations. Participants receive a CD containing lesson plans for all activities presented and a list of simulations for all content areas! Amanda Gonczi, Jenay Sharp Leach, Jennifer Maeng, University of Virginia; Randy Bell, Oregon State University

Genetics: Crazy Traits and Adaptation Survivor

Applications of Science

Biology/Life Science

Students learn new vocabulary when they study genetics such as: traits, alleles, and genotypes. How can you predict the traits of offspring when you know the genetic makeup of the parents? These ideas will come alive as you create crazy creatures with a unique kit, and study the resulting population.

Erik Benton CPO Science

Investigating Bone Cells and Gravity

Applications of Science

Biology/Life Science

Through experimentation with a popular cereal and simple snack bags, participants will explore an activity designed to help students be able to identify the effects of decreased bone mass (osteoporosis) and describe why healthy bones are important in space and on Earth.

Brandon Hargis NASA Langley Research Center, Aerospace Education Services Project

USA Biology Olympiad: What is in it for Virginia Students?

Applications of Science

Biology/Life Science

Participants will actively participate in the steps of preparing students for the USA Biology Olympiad. Tips on how to start USA Biology Olympiad Clubs for exam preparation and speakers will be provided. Practice exams will be explained and distributed.

Kathy Frame - Papillon Education Services LLC

An Inky Lead - Questioned Documents Analysis

Applications of Science

Chemistry

A tragic car accident; A horrific double homicide; Business schemes and drug rings. Process evidence from multiple crime scenes in a complex murder mystery scenario set in a rural Appalachian town. Can you and your students solve the Mystery of Lyle and Louise?

Cassie Vickers, Alex Headen, Frey Scientific

Integration of Nanotechnology into Chemistry Curriculum

Applications of Science

Chemistry

Topics and lessons will be presented to spiral the introduction of nanotechnology topics throughout the chemistry curriculum. This will be an overview and you will leave with planning resources and lesson ideas to try at your school. Focus will be on learning about nanotechnology using 21st century teaching techniques.

Pamela Yates

Playtime with Polymers

Applications of Science

Chemistry

Polymers are everywhere! Slime, bouncy balls, strawberries, gummies, spiders, bugs and YOU! Students will conduct actual chemistry--based investigations to unlock the secrets of polymers in our Natural World. Course is in collaboration with the VCU department of chemistry and the Nanomaterials Characterization Facility.

Eileen Malick, Pam Yates (Gentry)

Beyond Ancient: Why Fossils Matter

Applications of Science

Earth & Space Science

Fossils are specifically mentioned in science SOLs but in the real world, they have many more applications. In this session you'll learn how fossils tell of past climates and environments, how they're an indicator of the presence of resources such as natural gas, and other reasons why fossils matter. Fossil samples and associated lab activities will be provided.

Chris Kaznosky, Steve Leslie, Adrian Lam, Heather

Applications of Science Strand

Citizen Science with GLOBE Student Climate Research Campaign

Applications of Science

Earth & Space Science

The GLOBE Student Climate Research Campaign (SCRC) engages students in measuring, investigating, and understanding the climate system. Through these activities students contribute to climate science studies, connect with other schools around the globe, and conduct their own science investigations using GLOBE and NOAA Global Historical Climate Network data. Join the campaign and receive classroom ready climate activities, learn to access data, and prepare for SCRC Virtual Science Fair. Jessica Taylor, Preston Lewis, Sarah Crecelius - NASA Langley Research Center

Creating an Outdoor Digital Scavenger Hunt (Q-R codes & GPS)

Applications of Science

Earth & Space Science

Are you looking for a way to synthesize an on--campus field experience with the latest digital devices and approaches that include: GPS geo-- caching, QR code reading, inquiry lab stations, cooperative teaming, and a wonderfully engaged way for students to review Science Concepts(SOLs) through true synthesis and application? Consider trying a digital scavenger hunt: involving minimal equipment, unlimited curriculum tie--ins, and a ton of guided outdoor fun for your students. Michael Pratte, Cherise Hodge

Earth & Space Science: A Whole World Below Us and Around Us!

Applications of Science

Earth & Space Science

Join us as we present a variety of exciting programs and ideas for inspiring students grades K--12 (and adults in their lives) in the Earth & Space Sciences. STEM related strategies and careers abound whether you're exploring our Earth, its atmosphere, its oceans, its moon, and its fellow heavenly bodies of our universe. NASA supported activities and ideas for integrating Science into other elementary subject areas will also be presented. In addition, some make & take projects will be offered. Susan Bardenhagen, Mary Blessing, Kate Blessing

Orbits and New Worlds: NEW FOSS Planetary Science

Applications of Science

Earth & Space Science

In this session, we explore techniques scientists use to search for planetary systems around other stars in our galaxy. Engage in hands--on investigations and multimedia simulations in the FOSS Planetary Science course to support your students in learning space science concepts and exploration technologies. Bill Metz, Kip Bisignano - Delta Education

Under the Sea: Real World Lessons and SOL Connections

Applications of Science

Engineering

The Integrated Ocean Drilling Program (IODP) conducts seafloor research that has lead to many important scientific discoveries including evidence for how dinosaurs went extinct, plate tectonics theory, climate change, and the Chesapeake Bay Impact Crater. In this session, you will learn about the IODP, classroom resources, and future opportunities for teachers including those on a ship. Participants will leave this session with lessons and other classroom materials. Chris Kaznosky, Jennifer Collins

Addressing and Understanding the "E" in STEM

Applications of Science

Engineering

This session will focus on the salient aspects of engineering and how it is embedded in Science, Technology, Engineering, and Mathematics (STEM). Furthermore, the presenters will focus on the understanding of engineering through lesson design, teaching and assessments that measure true outcomes for STEM, but in particular, engineering. Considerations will be given to standards, the engineering design, and implementation strategies for classroom success. Kiana Thomas, Clair Berube - Hampton University - College of Education and Continuing Studies

Designing Through STEM Learning

Applications of Science

Engineering

Come see how Middle School and High School students have designed products using the LilyPad Arduino board while integrating STEM learning. The LilyPad is a sew able micro-controller that works by programming it using the open source software, Arduino. Come see how students have incorporated their own designs into fabric by using and programming LED lights and even sensors! Be prepared to be amazed by their unique work and the sudden urge to go shopping for some cool wearables. Stephanie Playton, Mano Talaiver, Paula Klonowski Leach Longwood University - Institute

DISCOVERYBASE

Applications of Science

Engineering

BIOBASE is a forensic science program with emphasis on life science and crime solving technologies. ROBOBASE is a robotics program emphasizing robot design and computer programming applications. Both BIOBASE and ROBOBASE expand on the students knowledge of physical and life science with practical applications in a lab setting. These student centered programs create inquiry -based problems that students solve through data collection and analysis, collaboration and critical thinking skills. Dara Brinkman, Heather Smith - DiscoveryBase

Emerging Engineers

Applications of Science

Engineering

This session will demonstrate hands-on engineering challenges completed by rising fourth graders during a two week summer camp for at-risk students. Each presenter will have a station with a different engineering challenge and provide demonstrations, samples of student products, and lesson plans for immediate use in the classroom. In addition, each presenter will share insights on lessons learned from the camp experience such as: time management and differentiation possibilities. Patti Horne , Ashlyn Tucker , Cary Lee Cumbo Tiffany - Averett University

Engineering Design Briefs: Jack & Jill Be Nimble

Applications of Science

Engineering

Can you name a nursery rhyme that uses engineering? This session will highlight relevant classroom instruction that facilitates the development of engineering skills and dispositions. Teachers will experience how to develop engineering design briefs that integrate literacy. You will walk away with ideas on how to create design briefs using well known nursery rhymes and fables in this hands-on session. Challenge your students while they read, create, calculate, write, and share engineering ideas. Peggy Schimmoeller, Pam Aerni, Arthur Bowman - Randolph College

Nuclear Science and Technology: The New Cool!

Applications of Science

Engineering

The session will cover the many applications of nuclear science and technology, and how they contribute to make our every day life better. In particular, the session will discuss the current and future role of nuclear power in Virginia, the US and in the world, taking into consideration the consequences of the Fukushima Daiichi events. Sama Bilbao y Leon - VCU

Applications of Science Strand

Scratch and LEGO WeDo

LEGO WeDo robotics is normally ear-marked as an elementary school product, and Scratch 1.4 was developed by MIT for young children to be able to program, but the combination of the two has tapped the interest of all levels of education, from primary to high school.

Applications of Science

Engineering

Eileen Malick

STEM: What It Looks Like & How To Do It

Brief introduction to STEM, what it looks like, & how to do it. Attendees will leave the session with a STEM lesson template, ready to use lessons designed for the Middle School classroom which meet SOLs for 6th, Life Science, & Physical Science, and an understanding of how to implement STEM lessons easily in the classroom. All materials will be in both paper & digital format. Attendees will participate in a STEM lesson. Rebecca Musso

Applications of Science

Engineering

Touchdown! Engineering Design Challenge

Teams of participants will design and build shock-absorbing systems that will protect two astronauts when they land. In this challenge, participants follow the engineering design process to: (1) design and build a shock-absorbing system out of paper, straws, and mini-marshmallows; (2) attach their shock absorber to a cardboard platform; and (3) improve their design based on testing results. Science as inquiry, engineering design, potential and kinetic energy, measurement and more.

Applications of Science

Engineering

Brandon Hargis - NASA Langley Research Center, Aerospace Education Services Project

DUST - Effectively Teaching Global Climate Change Concepts

This session showcases lessons and products produced in the NASA Innovations in Climate Education (NICE) PD from the summer of 2012 with a focus on dust. Participants will become versed in effective methods of teaching about global climate change. They will learn how podcasts aid in instruction, how to access NASA data sets, and use methods of social networking to aid instruction. This session features hands on labs utilizing the latest probe ware, iPad apps, and presentation techniques.

Applications of Science

Engineering

Cami Field, Daniel Lewandowski, Daniel Borick

STEM In Action: Fieldwork Experiences in Antarctica

STEM is the driving force behind a great deal of discussion within science education. But what does STEM actually look like in the real world? What better way to find out than by spending 6-weeks at sea with scientists and engineers! This session will give an overview of fieldwork and outreach experiences aboard the US Antarctic Program's icebreaker, the R/V Nathaniel B. Palmer. We will show and discuss real-world STEM experiences and share ideas for creating authentic STEM activities.

Applications of Science

Environmental Science

Stephanie Hathcock, Daniel Dickerson - Old Dominion University

The Health of Virginia's Forests

Inchworms... Thousand Cankers Disease of black walnut... emerald ash borers... flaking white oak bark... pine bark beetles... windstorms... The past year has been a busy one for many forest health concerns. Chris Asaro, Virginia's Forest Health Specialist with the Virginia Department of Forestry, will provide details on issues throughout the state. Archived issues of his publication, Forest Health Review, are available at <http://www.dof.virginia.gov/health/publications.htm>.

Applications of Science

Environmental Science

Chris Asaro, Lisa Deaton - Virginia Department of Forestry

Whales to Windmills, The Great Debate, Flipper & Finance

Give a new twist to some everyday earth science topics, Alternative energy resources, the space race 50 years later and the global economy based on Flipper can be so much fun! You will learn through hands on classroom tested activities used in my advanced Earth Science classes activities to take students far beyond the SOLs! These activities enhance critical thinking skills, problem solving, real world application and more. Throw away the textbooks and lets show the kids how to THINK & APPLY!

Applications of Science

Environmental Science

Conni Rasmussen

Integrating Your iPad or Mobile Device with Vernier Technology

Come see how the built-in wireless capabilities of our new LabQuest 2 support data collection on iPad and other mobile devices. You will be able to view and analyze data collected on LabQuest 2 using Graphical Analysis for iPad or on any device with a supported browser using Vernier Data Share.

Applications of Science

General Science

Patty Rourke, Jackie Bonneau - Vernier Software & Technology

Developing Key Process Skills with the Discovery Education Science TECHBOOK

One of the most important aspects of a quality Science/STEM curriculum is the opportunities for students to develop crucial process skills. Skills such as these are not taught directly but must be developed by experience. Learn about how the Discovery Education Science Techbook brings these experiences to the forefront.

Applications of Science

General Science

Patti Duncan - Discovery Education Techbook Implementation Manager

Engineering, Technology, and the Application of Science K-8

Ready to prepare you district's students for STEM careers? Using practical applications of science skills from inquiry-based lessons, you will learn how to collaborate your science resources and translate them into best practice engineering processes.

Applications of Science

General Science

Carolina Teaching Partner - Carolina Biological Supply Company

Equip Your iPad for Science

Get a preview of SPARKvue HD, PASCO's newly announced sensor-based science application for the iPad. SPARKvue HD is an integrated learning environment, offering a full suite of display and analytical tools, reflection prompts, journaling, and more plus full support of PASCO's growing collection of SPARKlabs. Get a hands-on experience collecting data on the iPad using PASCO's AirLink 2 Bluetooth interface and PASPORT sensors. This workshop requires that you bring your own iPad.

Applications of Science

General Science

Carla Johnson - PASCO Scientific

FOSS M.S. Institute: Raising the Rigor through Inquiry

Preparing the next generation of citizens and scientists to meet the needs of the 21st Century, requires students to go beyond memorization of science facts and to view science as a way of thinking and solving problems. The FOSS Middle School Program features inquiry-based investigations and opportunities for asking questions and solving problems using the scientific processes. In this institute, participants engage in hands-on FOSS investigations as well as learn easy to use strategies.

Applications of Science

General Science

Bill Metz, Kip Bisignano - Delta Education

Applications of Science Strand

Integrating STEM

Applications of Science

General Science

Integrating science, technology, engineering, and mathematics in the classroom can create exciting and interesting lessons and ignite student interest in the STEM fields. Come to this session to learn more about how to integrate STEM concepts, including engineering, into the science classroom.

Paula Klonowski Leach, Stephanie Playton, Mano Talaiver - ITTIP at Longwood University

Integrating STEM Across the Curriculum

Applications of Science

General Science

Interested in supporting the STEM initiatives in your elementary classroom? Come find ways to integrate STEM ideas across the elementary curriculum. Reading, writing, and history are key components in understanding and sharing ideas in STEM teaching and learning.

Kianga Thomas, Patti Horne, Dr. Pamela Aerni, Dr. Trina - Hampton University

Introducing the Vernier LabQuest 2

Applications of Science

General Science

Come try our newest sensor interface for all levels of science. The LabQuest 2 is our most versatile interface ever and it supports data collection as a standalone device, with a computer, and now with iPad and other mobile technology. The LabQuest 2 has all of the features you have come to expect from Vernier including multi-channel data collection; support for your existing sensors and powerful, yet easy-to-use, data analysis.

Jackie Bonneau, Patty Rourke - Vernier Software & Technology

Making Connections in STEM Education with Free Geospatial Web Accessible Tools

Applications of Science

General Science

With today's STEM education integration approach in the K-12 curriculum making connections about strategies, methods, and resource funding can be very challenging. One solution is to incorporate the use of geospatial thinking into the teaching/learning process as a meaningful and engaging opportunity for both teachers and students. This session will introduce and demonstrate a few basic spatial thinking concepts such as geographic information systems (GIS), geographic positioning systems (GPS), and remote sensing systems (RSS) using cost-free on-line inquiry based alternatives to expensive proprietary software. By making connections with geospatial problem based learning tools teachers are rewarded for their intellectual creativity and students learn real world knowledge skills.

Heather Smith, Greg, Overkamp, Scott Bellows

Planning & Teaching Cross-Curricular Units : Easy with FOSS

Applications of Science

General Science

How much time does it take you to find materials and resources to plan cross-curricular units? With FOSS, it is all done for you. See how we use our FOSS kits to design cross-curricular units that meet the Standards of Learning and raise our SOL scores in science and literacy.

Sherrie Roland , Leslie Lausten, Kip Bisignano - Delta Education

Project Based Inquiry Science and Technology

Applications of Science

General Science

Come see and do the new Project Based Inquiry Science program. A unique feature is the launcher unit for each strand that reinforces process skills and 21st Century classroom skills to start the school year. Thirteen module books cover SOL topics in life, earth and the physical sciences in either an integrated or layered cake approach. A scenario and project based approach integrated with Fourier data collection.

Tom Custer - It's About Time Publishing

Science Museum of Virginia Out of School Time Programs

Applications of Science

General Science

The Science Museum of Virginia is developing a new series of Digital Media Projects for Out-Of-School Programming. These projects are open ended challenges designed to get students to apply their knowledge from a wide range of disciplines, work with local experts, and digitally communicate their solutions back to the museum. This program ties content to current, local events and help students understand the relevance of the tasks as well as how it ties to their own community.

Chuck English - Science Museum of Virginia

Using Scientific Data to Model Collaboration Between Schools

Applications of Science

General Science

In this session, VISTA trained teachers will provide middle and high school teachers with a practical application of data collection and analysis using watershed data collected collaboratively between two middle schools in different regions of Virginia. The VISTA teachers will share strategies for using data to actively engage students in the classroom.

Anne Mannarino, Laurie Ashworth, Kristen Shacochis-Brown, Sarah Pope - The College of William and Mary

Vertical Planning Using the 5E model for K to Second Grade

Applications of Science

General Science

Young children come to school with preconceptions about how their world works. Our task, as teachers, is to guide children to discard their preconceptions and change their understanding. The 5E model supports children's construction of science learning. The participants will engage in four strands that spiral in our standards: Magnets, Earth Cycles, Matter, and Life Processes. They will explore, explain, and elaborate the science concepts, & then conduct & evaluate the tasks for their classroom.

Sandra Kelish

Virginia STEAM Academy

Applications of Science

General Science

The Virginia Science Technology Engineering and Applied Mathematics (STEAM) Academy is intended to be a uniquely challenging experience for students who show exceptional talent in science, technology, engineering, or mathematics. Modeled after the acclaimed North Carolina School for Science and Mathematics (NCSSM), the Virginia STEAM Academy aims to significantly enhance the Commonwealth's STEAM teaching and learning capacity and impact economic development.

Judy Stewart, Caroline Martin - Virginia STEAM Academy

Active Chemistry--Active Physics Scenario/Challenge Driven

Applications of Science

Physics/Physical Science

Introductory chemistry and physics programs which are scenario, challenge driven and STEM infused. This is an NSF funded activity before concept instructional approach that addresses all learning styles and has positive assessment results. Come and complete some student activities and win prizes.

Tom Custer - It's About Time Publishing

Applications of Science Strand / Green Science Strand

Cold War Navy - Science Lessons

Applications of Science

Physics/Physical Science

Learn about lesson plans that focus on the technological history behind Cold War era advances: specifically Covert Submarine Operations, air warfare, surface warfare, and research & development. The lesson plans include the history of technology related to each area. They were created by science and history teachers from across the country during summer fellowships at the US Navy Museum in Washington, DC. Bill Sanford

Nanotechnology: A Problem-based learning approach

Applications of Science4

Physics/Physical Science

This session will outline a problem-based learning approach to studying nanotechnology. The unit includes lab explorations of size-dependent effects and research on technologies that use unique properties that occur at the nanoscale. Nanotechnology is a controversial, socioscientific issue that presents both potential benefits and risks to society. New Physical Science standards require students to recognize examples of the application of nanotechnology.

Lori Andersen, Elizabeth Hobson - College of William and Mary

To Infinity and Beyond!

Applications of Science

Physics/Physical Science

NASA's Space Launch System, or SLS, will be designed to carry the Orion Multi-Purpose Crew Vehicle, as well as important cargo, equipment and science experiments to destinations beyond Earth's orbit. This session will introduce participants to the concepts to be used in the development of the SLS and how teachers can build and launch paper rockets made from easily obtained materials with their students.

Brandon Hargis - NASA Langley Research Center, Aerospace Education Services Project

Using FOSS in the Context of Elementary STEM Education

Applications of Science

Physics/Physical Science

This hands-on workshop has been crafted for teachers who want to challenge their students to go beyond the scripted nature of guided inquiry lessons. During this one hour session, participants will experience how current FOSS primary and intermediate investigations lend themselves to meeting STEM criteria. Participants will engage in collaborative group tasks with specific materials as they craft their own data based solution to stated challenges.

Bill Metz, Kip Bisignano - Delta Education

Designing and Engineering a Wind Turbine

Green Science

Engineering

Participants will learn about the basics of how a wind turbine works and then engineer their own wind turbine blades using the design process. Teams will compete to build the turbine that will generate the most electricity. Participants will also be introduced to the myriad of curricular materials available to teach about wind energy in the classroom as well.

Remy Pangle - Virginia Center for Wind Energy at JMU

A Novel Approach to Environmental Science

Green Science

Environmental Science

Contemporary young adult literature may be used to improve student understanding of environmental science concepts. A literacy scaffolding approach along with structured literacy activities will be introduced to increase reading comprehension and science knowledge for all students.

Justin Brosnahan

BayQUEST - Developing an Enrichment Environmental Camp

Green Science

Environmental Science

BayQUEST is a science enrichment program funded by a Beazley Foundation grant. It is part of a sustained activity meeting the needs of the Meaningful Watershed Experience. BayQUEST uses an integrated approach to introducing concepts in geology, marine biology, history, and economics of the Chesapeake Bay Watershed. Fun and exciting problem-based, hands-on activities and complete access to the BayQUEST curriculum will be shared. Come prepared for a piratey good time!

Allison Reeves, Daniel Lewandowski

Energy in Virginia - New Approach for Renewable Energy

Green Science

Environmental Science

A fresh, new approach to presenting concepts in renewable and non-renewable energy with a Virginia focus. Teachers attending will receive a set of materials: Question Power, an original 6 minute video, and Energy in Virginia, a detailed poster map with energy sources and systems. Materials include a review of advantages and disadvantages of all major energy sources: wind, solar, hydroelectric, geothermal, biomass, oil, coal, natural gas and uranium. This project was funded by Dominion.

David Hagan - Science Museum of Virginia

Food for Thought!

Green Science

Environmental Science

Edible Aquifers? Gummy Worm Conservation? Chocolate Chip Cookie Earth? What do these have in common? They get students engaged in their learning through food! What kid doesn't like something to eat during the course of the day? None that I know of. These three activities teach students the importance of conservation, resources, and our most precious commodity, water. Aimed at grades 3-6.

Cyndy Mattia

Get2Green: School District Wide Environmental Stewards

Green Science

Environmental Science

FCPS is dedicating system-wide resources to environmental stewardship through its Get2Green initiative. Partnered with the NWF Eco Schools USA program, FCPS is fostering student driven eco teams at over 45 schools to address issues such as recycling, energy conservation, sustainable food and wildlife habitat. FCPS has worked to develop partnerships across the school district and with outside organizations. Professional Development for administrators and teachers has been a focus.

Elaine Tholen

Project SEARCH Real-Time Data

Green Science

Environmental Science

Come learn about a NOAA-funded effort that has placed real-time observation buoys in Virginia's waterways. We will share activities and data that you can use with your students. Come explore ways that you can be involved in helping monitor water quality in Virginia.

Daniel Dickerson, Stephanie Hathcock, Laura Nelson - Old Dominion University

Student-Made Documentary Films May Save the World

Green Science

Environmental Science

Come learn about the Beazley Foundation funded, RiverQuest, where students made documentary films to educate the public about environmental issues their community faces. We will describe the process, what worked and what did not, and ways that you can use documentary film with your students to increase relevance and interest for students regarding environmental science content.

Daniel Dickerson, Stephanie Hathcock, Laura Nelson, Jennifer Garcell, Sherrye Pollard - Old Dominion University

Green Science Strand

Successful Schoolyard Habitat Projects

Green Science

Environmental Science

See examples of VA schools that have installed habitat gardens and are using them to instruct a broad range of SOLs. Project examples will illustrate outdoor classrooms that were planned according to site conditions, such as a habitat on a slope or in a drainage swale. We'll discuss the importance of curricular connections; common challenges that must be overcome; built in maintenance planning; and the crucial value of community sponsors. A checklist for habitat planning will be provided.

Carol Heiser - VA Dept. of Game and Inland Fisheries

Teaching About Our Human-made World

Green Science

Environmental Science

Take part in hands-on activities that explore how our species' population has expanded to dominate the Earth and remake the natural world in unprecedented ways. Engage in interdisciplinary games, role-playing and creative problem-solving activities to build students' knowledge and skills in life, earth and environmental sciences, while also addressing state standards for math and social studies. Free CD-ROM of activities.

Lindsey Bailey - Population Connection

The State of the Forest

Green Science

Environmental Science

What percent of Virginia is covered in forests? What type of forests do we have? What benefits and products do our forests provide locally and globally? Join Charlie Becker, Utilization and Marketing Manager with the Virginia Department of Forestry, to learn the answers to these questions and more. Samples of some forest products, such as wood pellets, will be provided.

Charlie Becker, Lisa Deaton - Virginia Department of Forestry

USED Green Ribbon Schools- Making Our World a Greener Place

Green Science

Environmental Science

Join Virginia's two US Dept. of Education Green Ribbon Schools as they share what they are doing to make the world a greener place, provide ideas for what you and your students can do at your school to increase environmental literacy, and tips for applying to be the next Virginia nominee for the USED Green Ribbon Schools award. This workshop will assist you with the Green Ribbon application and give you specifics on implementing composting, recycling, gardening, and Earth Hour activities.

Thomas Fitzpatrick, Judy Lackey

VAST Adds a New Leaf to It's Tree of Knowledge for Teachers

Green Science

Environmental Science

What does it mean to be Environmentally Literate? What are the components of Environmental Literacy? How does Environmental Literacy contribute to academic success? What can you do in your classroom to produce Environmentally Literate students? VAST has added a new component to the organization, Environmental Literacy. Come gather answers and share ideas of what the committee needs to provide to teachers to produce Environmentally Literate students in Virginia's Schools.

Cindy Duncan - VAST Board - Chair - Environmental Literacy Committee

Energy as a Unifying Concept

Green Science

General Science

What makes energy a candidate for being a unifying concept in science? How about the fact that each and every aspect of life, science and stuff is rife with energy components. The total life cycle (cradle-to-cradle) (of everything grown and mined) ripples out into each person's energy footprint - with cascades of cause-and-effect relationships. Consider the green ways to engage students, teachers and administrators in energy literacy - the true cost of energy- in all of its glorious complexity?

Jim Disbrow - EduFlicks

Funding an Outdoor Classroom

Green Science

General Science

Do you have a dream of creating an outdoor classroom? I won a VAST grant which helped fund this classroom. This presentation can give you ideas of how to get funding, find donors, and volunteers. I also include ways to incorporate the space into everyday lessons. I made a handicapped walkway to an outdoor classroom for less than \$3000! You can too! I will provide links to resources that I used for funding so you can start your dream classroom right away!

Alison Dossick, Meg Moberg

It's Always Earth Day on the Farm

Green Science

General Science

Discover what's really happening down on the farm! During this session we will investigate a bird's eye view of the barnyard, and take a closer look at what's going on behind the scene of crops and critters. Using the farm as our backdrop, participants will take part in various environmentally themed lessons addressing the elementary science standards of erosion, the water cycle, soil, and animal needs. Teachers will receive curriculum as well as other classroom resources.

Lynn Black - Agriculture in the Classroom

PLT's GreenSchools! Program

Green Science

General Science

Learn how to become a Project Learning Tree GreenSchool and be part of the national movement to reduce the ecological footprint of our nation's schools. Five investigations are available to study energy, water, school site, waste and recycling, and environmental quality at your school. This session will also review activities in PLT's Municipal Solid Waste module. Copies of the module and Virginia SOL correlation will be provided to session participants.

Lisa Deaton - Virginia Department of Forestry

PLT's GreenSchools! Program

Green Science

General Science

Learn how to become a Project Learning Tree GreenSchool and be part of the national movement to reduce the ecological footprint of our nation's schools. Five investigations are available to study energy, water, school site, waste and recycling, and environmental quality at your school. This session will also review activities in PLT's Municipal Solid Waste module. Copies of the module and Virginia SOL correlation will be provided to session participants.

Lisa Deaton - Virginia Department of Forestry

Green STEM Ideas for Turning Trash to Treasures

Green Science

Math in Science

Environmentally speaking, just about anything can be repurposed for teaching STEM + A for the Arts = STEAM classes, home use, or fund-raising projects. Items once considered "trash" can be transformed into Math manipulatives, creatively engineered into economical structures or hands-on Science activities, or Art projects Ecology Clubs can use these ideas for fund-raising projects and for fostering environmental awareness with recycling projects. Kits of Math manipulatives will be offered.

Susan Bardenhagen

What's in Your Science Teaching Toolbox Strand

Stand Back!! We're Using Discovery Education Science Techbook for Grades K-12 What's In Your Science Teaching Toolbox General Science
Learn how to ENGAGE your students as they EXPLORE science through digital media in conjunction with hands-on resources. In this session we will EXPLAIN how digital media can help develop process skills, ELABORATE on strategies for the science literacy connection and ways to meet the needs of every student, and EVALUATE student progress through science concepts.

Patti Duncan- Discovery Education Techbook Implementation Manager

American Oystercatcher Breeding Success in Coastal Virginia

What's In Your Science Teaching Toolbox Biology/Life Science

Field-based research data made available to educators can provide tangible examples of the important role math and science play in a variety of professions. We offer one such example in our presentation of a study we conducted on the breeding success of American oystercatchers (*Haematopus palliatus*) in coastal Virginia from 2009 - 2011. We will provide an overview of the life history of oystercatchers, present project methods and results, and discuss the conservation implications of our work

Ruth Boettcher, Alexandra Wilke, Pamela, Denmon Kevin - VA Dept. of Game and Inland Fish

Changing the game of Classroom Resources

What's In Your Science Teaching Toolbox Biology/Life Science

Beyond the static printed text and pdf e-book! Imagine teaching using a living, breathing, scholarly-vetted online knowledge portal. FREE 4-week, unlimited product access will be granted to all Session attendees! Check this out!

Zach James - Cengage Learning

Design Based Learning-Compost Matters!

What's In Your Science Teaching Toolbox Biology/Life Science

In this session, we will present an innovative way to teach the concept of energy in ecosystems through design based learning. Students are given a performance task in which they are challenged to design and build a home composter. Through the task, designed for gifted learners, students are immersed in inquiry, research, and collaboration using web 2.0 tools. A movie showing students in action, a detailed learning plan and other resources will be shared. Prepare to be energized!

Cindy Kube, Suzanne Forehand

ELectrifying the Science Classroom

What's In Your Science Teaching Toolbox Biology/Life Science

Co-Teaching in the General Education classroom with transitioning ELL (English Language Learners) students and their teacher. Learn how one school is using a co-teaching method to bridge the gap between ELL supported classes and an independent language learner. SIOP (Sheltered Instruction Observational Protocol) methods will be highlighted with the focus on vocabulary. Science classrooms offer an excellent opportunity to engage students in science and language objectives. Spark your classroom!

Joyce Zupko, Parham Cain

FOSS Populations and Ecosystems: Take Science Outdoors!

What's In Your Science Teaching Toolbox Biology/Life Science

The presenter highlights activities with organisms and technology, including PlanetFOSS as a model for studying organisms native to Virginia. A garden or small wooded area is all that you need to find organisms needed to study key life science concepts. Join us for a breath of fresh air during the PDI!

Rita Truelove, Kip Bisignano - Delta Education/FOSS

Frankenstein Lives!

What's In Your Science Teaching Toolbox Biology/Life Science

This is a hands-on approach to teaching human anatomy where students will literally build a body to scale from the inside out using only recycled materials. The overall project requires a tremendous level of creativity, critical thinking, problem solving, team work and a willingness to think outside the box. This presentation is about moving through this project from start to finish and includes how to grade it.

Tina Fritz

Google Earth Biome Tours

What's In Your Science Teaching Toolbox Biology/Life Science

Fly from the tundra of Alaska to a deciduous forest in China. Dive into a deep-sea trench to spy on the bizarre life forms that call this hotbed home. Join us to learn how your students can share their knowledge of biomes in an engaging and creative format. We will share this research-based project with you from concept to final product. If we have internet access, this will be a hands on session where you will learn how to create a Google Earth tour on the spot!

Susan Rigby, Diane Harding

Hands-On Science with Classroom Critters

What's In Your Science Teaching Toolbox Biology/Life Science

Animals broaden inquiry-based explorations and student interest in science. Through fun, simple, hands-on activities, participants learn about termites and insect pheromones; how isopods are great for teaching evolution, adaptation, and behavior; and about experiments that incorporate measuring with beetle activities. Session includes care and handling information, free samples, and literature.

Carolina Teaching Partner - Carolina Biological Supply Company

Increasing Literacy in the Science Classroom

What's In Your Science Teaching Toolbox Biology/Life Science

Are you confused about how to increase literacy in the science classroom? Are your science students prepared for new literacies, including technological and scientific literacies? This presentation will assist science teachers in discovering the importance of increasing literacy learning in the science classroom. In addition, this session will provide tips and suggestions for integrating literacy learning based on recent empirical research that will coincide with state Standards of Learning.

Jillian Wendt

Life Science Round-Table Discussion

What's In Your Science Teaching Toolbox Biology/Life Science

This will be an hour for life science instructors with a variety of teaching experience levels to sit down together and talk/network about what we do best with our own classes. New teachers are welcome too! Discussions will include ideas and suggestions for in-class books, movies, discussion topics and tangents, lab activities, demonstrations, field trips and projects. Everyone is encouraged to bring your favorite lessons from your teaching bags of tricks to share.

Tina Fritz

What's in Your Science Teaching Toolbox Strand

Oyster Reef In The Classroom, A Hands On Laboratory App

What's In Your Science Teaching Toolbox Biology/Life Science

What is the importance of an oyster reef and how do oysters affect the Bay? Using the CBNERR Habitat Cage, students will be able to answer these questions and be exposed to invertebrates, while gaining experience using microscopes, a dichotomous key, and a field guide all in the classroom. Participants in this session will gain the tools and knowledge to simulate the activity in their classroom, and will leave with a lesson plan, dichotomous key, field guide, and instructions to build a cage. Jaclyn Miller - Chesapeake Bay National Estuarine Research Reserve

Using Simulated Labs In Minority Majority Classrooms

What's In Your Science Teaching Toolbox Biology/Life Science

Engaging our middle school technology junkies, especially ELL students and struggling readers, is becoming more difficult. Gizmos from www.Explorablelearning.com offers computer simulations where students predict outcomes, manipulate variables, analyze their results, and make conclusions about those results. Many of the Gizmos offer extended thinking opportunities. Many support materials accompany Gizmos. Learn how to use Gizmos and tailor them to your classroom. Seminar with hands-on follow-up. Chuck Bowler

Using Virtual Labs in the 6-12 classroom

What's In Your Science Teaching Toolbox Biology/Life Science

Workshop on how virtual labs can enhance your classroom, increase the use of labs and decrease costs and safety issues.

Clarence Cocroft - Pearson/ Prentice Hall

Wildlife in the Classroom/VDGIF Permits &/or Authorization

What's In Your Science Teaching Toolbox Biology/Life Science

VDGIF will discuss the steps that teachers can take to allow scientific research and observation within the classroom. Topics will include an overview biological impact of species research in the classroom, purchasing certain species via VDGIF permit and a review of permits available through VDGIF. Additionally, staff will discuss out-of-state biological supply companies that offer animals for sale to teacher where in some cases the species are either protected or banned by VDGIF regulations. James Husband , Shirl Dressler , Ed Steinkoenig, Susan Watson - Virginia Department of Game & Inland Fisheries

ChemDemo Website & Workshop: Catalysts for Science Educators

What's In Your Science Teaching Toolbox Chemistry

ChemDemo is an ongoing outreach project from JMU's Department of Chemistry and Biochemistry targeting science educators in the Commonwealth. This presentation will highlight the latest updates to our website and workshop, both of which aim to facilitate the use of demonstrations in the classroom. ChemDemo resources include directions, safety information, handouts, videos, lesson plans and problem sets. Demonstrations on the website are searchable by Virginia SOL. Casey Rogers, Kevin Caran - James Madison University

Chemistry Foldables Fun

What's In Your Science Teaching Toolbox Chemistry

My students love it when they hear it is a foldable day. I love it that they are engaged and that they use them routinely. Participants will get to make and take foldables focusing on both qualitative and quantitative concepts in first year chemistry. Other foldable ideas will be shared. Jill Barker

Chemistry Share-a-Thon

What's In Your Science Teaching Toolbox Chemistry

Chemistry teachers in Virginia will share student-tested activities, labs, demonstrations, and/or projects. Handouts and/or web sources will be provided. Jill Barker

Chemistry SOL 6 - Organic in the Classroom and Lab

What's In Your Science Teaching Toolbox Chemistry

Information and hands on activities to incorporate the new standard 6 for chemistry. Geared toward teachers who have not taught organic chemistry before and covers polymers, biochemistry applications, and more. Sandra Bennett

Incorporating Changes to the Chemistry SOL in your Classroom

What's In Your Science Teaching Toolbox Chemistry

A group of chemistry teachers met this summer at JMU to discuss how to incorporate the new chemistry standard focusing on organic chemistry and biochemistry and to develop practice technology-enhanced item questions. Information and questions developed from that meeting will be shared by attendees. Jill Barker

LEGO MY ELEMENTS

What's In Your Science Teaching Toolbox Chemistry

The purpose of the session is to review concepts related to matter and the periodic table. Attendees will construct models of atoms and molecules that represent a variety of pure substances and mixtures using LEGO blocks as well as demonstrate the activity of molecules in all three states of matter. Teachers will also walk away with a variety of methods for displaying the periodic table and incorporating chemistry into lessons for elementary and middle school students on a daily basis. Domonique Butler, Kim Dye

Using Live Binders for AP Chemistry

What's In Your Science Teaching Toolbox Chemistry

How to set up and use free website livebinders.com to prepare review materials, lecture materials, student share and more. Pamela Yates

Earth Systems Data Visualization for the Classroom

What's In Your Science Teaching Toolbox Earth & Space Science

This session will provide an overview of the MY NASA DATA project, examples from the Live Access Server, and sample lessons for use in the classroom or for individual and collaborative student research projects. Participants will have an opportunity to review at least one sample activity. After this session you will be able to access and create visualizations of NASA Earth Observing Satellite data! Copies of lessons and activities demonstrated in the session will be provided. Preston Lewis, Jessica Taylor - SSAI / NASA LaRC

It's S'COOL to be a NASA Cloud Observer

What's In Your Science Teaching Toolbox Earth & Space Science

Engage your students in observing for a NASA satellite mission! The NASA CERES Students Cloud Observations On-Line (S'COOL) project is a hands-on project that supports NASA research on the Earth's climate. Participants will receive an overview of the S'COOL project, including instructions on how to get students involved in the program, and sample hands-on activities. Plenty of hand-outs!

Preston Lewis, Jessica Taylor - SSAI / NASA LaRC

What's in Your Science Teaching Toolbox Strand

Kids in Space!

Learn how to introduce young children to the Solar System through the use of fiction and non-fiction literature, hands on craft activities and movement activities. Participants will receive book and website lists along with make-and-take craft projects. Isabel Valentini, Lisa Dube

What's In Your Science Teaching Toolbox Earth & Space Science

Real Geospatial Technology in the Classroom

Learn to incorporate Geospatial techniques into your classroom and change the way you teach. Participants will learn to use Satellite imagery (GIS), data analysis tools (Image J) and geospatial software (Earth Exploration Tool Book and NEO) with their students. In our collaborative science and technology session, we will give you resources that will change the way you present science. Your students will DO science and go far beyond a worksheet or textbook. Michele Baird, Deborah Marshall

What's In Your Science Teaching Toolbox Earth & Space Science

VESTA Shar-a-thon

Looking for some different ideas for your Earth Science related lesson? Have a unique activity which you use in meteorology, geology, oceanography or astronomy? Then come join other earth science teachers as we share ideas and lessons for these topics. Margaret Greene - VESTA

What's In Your Science Teaching Toolbox Earth & Space Science

What Are These Rocks, Anyway?

Over the last several years, the members of the Virginia Transportation Construction Alliance (VTCA) have provided free sample sets of rocks and mineral products to teachers, working through VAST. One mystery remains in the minds of many teachers - what are these rocks, anyway? This interactive session will explore what these rocks are, where they are from, and what do they represent for student learning of Science SOLs.

What's In Your Science Teaching Toolbox Earth & Space Science

Eric Pyle, Sam Hollins - James Madison University

Incorporating Children's Engineering into Science

Children's Engineering provides a problem solving, hands-on approach to teaching science. In this session, participants will learn how to successfully incorporate children's engineering into what they are already teaching in science, as well as how to incorporate writing into the process. Participants will come away with ready to use design briefs to use in science for K-4th grades. Barbara Adcock

What's In Your Science Teaching Toolbox Engineering

Makerbots and Printrbots: 3D Printing in Science Classrooms

Three-D printers (printers that build a solid, 3D object from an existing file) are now readily available and relatively inexpensive. They fit easily on a desktop and are easy to operate. The printers offer a number of opportunities to bring such basic engineering concepts such as design and prototyping into the science classroom. Using free 3D design software programs like Google SketchUp or TinkerCad, students can design gears, wheels, cars, boats, and just about anything that can be imagined. George Meadows, University of Mary Washington

What's In Your Science Teaching Toolbox Engineering

Become GLOBE Certified - Investigating Temperature

GLOBE is a community of over 24,000 schools world-wide. GLOBE students collect environmental measurements, analyze data, and participate in research in collaboration with scientists. Session participants will become Certified GLOBE Teachers in the Temperature Protocol by learning how to use GLOBE instruments, analyze temperature data, and engage in the Microclimates Activity. Temperature observations can be used for GLOBE Climate Campaign's Virtual Student Science Fair. Jessica Taylor, Lin Chambers, Preston Lewis, Sarah Creceliu - NASA Langley Research Center/SSAI

What's In Your Science Teaching Toolbox Environmental Science

Exploring Earth Science through Elementary GLOBE Story Books

Join GLOBE story-book characters Simon, Anita, and Dennis as their adventures take them on a journey through science. Elementary GLOBE introduces younger students to Earth System Science. The series of five science-based storybooks present key concepts in water, soil, clouds, seasons, and Earth system studies. Each story offers complementing classroom learning activities. As an extension, students can become citizen scientists by collecting environmental science data. Materials free online. Jessica Taylor, Lin Chambers - NASA Langley Research Center

What's In Your Science Teaching Toolbox Environmental Science

Project Learning Tree's Focus on Forests Module

In this module, students examine ecological systems of a forest; analyze interdependencies within a forest ecosystem; and explore factors, such as fire, that shape the development of forests. Full details are available at <http://www.plt.org/focus-on-forests>. This session will review many Virginia-specific resources available to study our forests. Participants will receive a copy of the module and a correlation to Virginia's SOLs.

What's In Your Science Teaching Toolbox Environmental Science

Lisa Deaton - Virginia Department of Forestry

Active Assessments Using Google Forms

Quick and easy access to data is an integral part of the 21st Century Classroom. Using Google Docs teachers and administrators can quickly create surveys for use in communicating with other teachers, parents and students. Using the Forms feature of Google Docs, rubrics can be created to allow students to self assess projects allowing teachers to track student progress. This session will allow one to see the benefits of online documents and how Portsmouth Schools is using them. Richard Neefe, Daniel Lewandowski, Daniel Borick

What's In Your Science Teaching Toolbox General Science

Applying the Research for Effective Blended Teacher Learning

Come discuss research-based models of blended teacher learning that integrate online learning communities and resources to enhance local onsite efforts. Case studies by Virginia science specialists will inform discussions on issues like: a) teacher engagement & recognition, b) teacher learning needs & preferences, c) the importance of organization support & affordable incentives for teacher effort, and d) the need for integration in the blend to ensure coherent and on-going teacher learning. Al Byers, Leisa Clark - National Science Teachers Association

What's In Your Science Teaching Toolbox General Science

Chef's Don't Use Cookbooks, Why Should Students?

Inquiry oriented investigations involve inquisitiveness; however, many of the labs we provide to students may present scientific phenomena but fall short on inquiry. This workshop will present a number of uncomplicated strategies for shifting perfunctory cookbook labs more towards inquiry. Bill Metz

What's In Your Science Teaching Toolbox General Science

What's in Your Science Teaching Toolbox Strand

Connecting the Dots between Skepticism and Science

The clever manipulation of data is often used to sell common products. Attend this workshop and see how common advertising strategies apply to the development of more cogent data interpretation procedures in your science investigations.

What's In Your Science Teaching Toolbox

General Science

Bill Metz

Cooperative Scoring

Cooperative scoring is a method to increase student engagement and accountability for cooperative groups. This method has been used in the my classroom for the past two years and student understanding, participation, and grades have increased. During this session how to select cooperative groups and grading for mastery will also be addressed.

What's In Your Science Teaching Toolbox

General Science

Janet Lundin

Cubelets and Arduinos: New Tech for Science Teachers

The past two-three years have seen the emergence of a new kind of technology for education. This new technology could be characterized as inexpensive, easy to use, and offering a wide variety of opportunities for science educators in all grade levels and in all SOL areas. In this presentation I will demonstrate how some of the new technology might be used in science teaching and provide the audience hands-on practice with Cubelets, Arduinos, Makey Makeys, and other new technology.

What's In Your Science Teaching Toolbox

General Science

George Meadows - University of Mary Washington

Data Analysis: Selecting Appropriate Stats & Graphs

Computer and calculator-based tools enable students to generate multiple statistics and graphical displays. However, only certain measures of central tendency and dispersion and types of graphs are appropriate for a given experiment. Use knowledge of the type of independent and dependent variable to identify appropriate techniques for analyzing experimental data. Decision-making tables exist for beginning, intermediate and advanced learners.

What's In Your Science Teaching Toolbox

General Science

Julia Cothron, Mary Frances Hobbs

Data Analysis: Selecting Appropriate Stats & Graphs

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What's In Your Science Teaching Toolbox

General Science

Julia Cothron, Mary Frances Hobbs

Differentiating Inquiry

Inquiry and differentiation are powerful tools in the science classroom! In this presentation, learn how to develop tiered inquiry activities to engage all students in learning. We will discuss different levels of inquiry and show how to create differentiated activities based on these levels. Examples from all science content areas provided. Please bring an activity/lab for modification during the session. Participants will receive a CD containing lesson plans for all activities presented!

What's In Your Science Teaching Toolbox

General Science

Brooke Whitworth, Lindsay Wheeler, Jennifer Maeng, Randy Bell - University of Virginia

Engaging Students with Note-taking & Lesson Extensions

Want to reach 100% student participation when summarizing and note-taking? Interested in finding ways to integrate all content areas when teaching Science topics? In this session, teachers will be involved in note-taking that engages students while integrating all subject areas. Teachers will broaden their learning with lesson extension activities to build student mastery.

What's In Your Science Teaching Toolbox

General Science

MiaLynn DiDomenico

Exploring Nature of Science: Patterns & Creativity

Experience engaging, hands-on activities that address nature of science SOLs, reinforce process skills, and teach relevant science content. This session introduces classroom-tested, engaging, process skill-based activities that help students understand the role of patterns and creativity in science, can be applied to all content areas, and are easily modified for students in grades 3-12. Participants receive a CD containing activity descriptions for all activities presented.

What's In Your Science Teaching Toolbox

General Science

Jennifer Maeng, Randy Bell - University of Virginia

Exploring the Nature of Science

Come explore and understand what the nature of science means to you and your students. Discover resources and strategies which will enable you to integrate the nature of science into your questioning, student discussions, and existing lessons.

What's In Your Science Teaching Toolbox

General Science

Lisa Arnold, Nancy Vest - Five Ponds Press

Flipping to Solve Problems in Science

Many middle school students need motivation in order to actively engage in learning. When students can "pre-learn" the basics of a lesson at home, they come to school ready for in-depth, hands-on explorations in the classroom. I am combining a modified flipped classroom with problem-based learning for selected lessons this year in an effort to better engage my less enthusiastic students and stretch my more capable students.

What's In Your Science Teaching Toolbox

General Science

Beth Evans

Get Paid to Improve Your Students' Learning with VISTA PD

Do you want to learn new and innovative ways to reach your students AND get paid for it? The Virginia Initiative for Science Teaching and Achievement (VISTA) will share opportunities available through our Elementary Science Institute and Secondary Teacher Program. Programs are open to (1) teams of elementary teachers in grades four through six who teach science and (2) beginning 6th - 12th grade science teachers. Join us to find out all the details and benefits from participants and staff!

What's In Your Science Teaching Toolbox

General Science

Donna Sterling, Jacqueline McDonnough, Vicky Reid George Mason University

Increasing Science SOL scores in Urban Middle Schools

Teaching science in urban middle schools presents unique challenges. This seminar provides hands-on activities and strategies to help teachers and administrators. Learn how to integrate curriculum, special education teachers and other aspects to increase SOL scores. Identify and discuss strategies for tiered learning and science centers.

What's In Your Science Teaching Toolbox

General Science

Lisa Moore

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

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

We listened! **EXPLORING SCIENCE ALL AROUND US** student books for Grades 3, 4, and 5 are about to ship!



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

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

FREE SAMPLES!

What's in Your Science Teaching Toolbox Strand

Integrating Technology Tools in Science Inquiry

What's In Your Science Teaching Toolbox

General Science

The Innovative Technology in Science Inquiry Scale Up (ITSISU) prepares teachers in Alaska, Iowa, Kansas and Iowa to integrate inquiry based learning with probeware and modeling. ITSI allows students to make predictions and collect data, analyze results, run a computer-based model, annotate snapshots of that model, and save their work within one application. Assessment data are also included. Teachers can customize activities and engage students in real time data acquisition. Bring your laptops!

Manorama Talaiver, Paula Klonowski, Stephanie Playton - Institute for Teaching through Technology & Innovative Practices - Longwood

Interactive Notebooks

What's In Your Science Teaching Toolbox

General Science

In this presentation we will explain and demonstrate how to start interactive notebooks in any classroom. We will have samples to show for our classes as well as some resources to help get you started. We will discuss the benefits of notebooks as well as the impact on the children and how the notebooks help students prepare for testing.

Jackie Davis, Sara O'Donnell

What Quality Science Instruction has to do with Raising Achievement

What's In Your Science Teaching Toolbox

General Science

Learn how inquiry-based science instruction increases student achievement on assessments in reading, writing, and mathematics. Leave with practical strategies that will help you advocate for quality science instruction in your district. Carolina Teaching Partner, Carolina Biological Supply Company

iTeach: Using iPads to Teach Science

What's In Your Science Teaching Toolbox

General Science

We will explore how you can use one iPad or a classroom set of iPads to help your students learn science. We will have examples for all content areas. If you have an iPad please bring it, if not, we will have some for you to use.

David Slykhuys - James Madison University

Let's Make Science Vocabulary Interesting and Fun to Learn

What's In Your Science Teaching Toolbox

General Science

Science vocabulary can be like a foreign language. So why not approach the teaching as if you had a class of English Language Learners (ELLs)? Learn some new plus tried and true methods to help the students retain these new vocabulary words and be able to apply them to the concepts.

Peggy Stevens - Virginia Commonwealth University

Make and Take Science Foldables

What's In Your Science Teaching Toolbox

General Science

Science foldables are cute, colorful and fun to make but how do they engage your elementary students with science content? This session will focus on the philosophy behind these interactive resources and provide time to construct several examples. Bring your camera to take pictures of samples. Leave inspired with lots of ideas on ways to adapt my samples to fit your grade level.

Kim Dye

Middle School Notebooks: Writing about Inquiry and Content

What's In Your Science Teaching Toolbox

General Science

The scientist's notebook is a detailed record of his or her engagement with scientific phenomena. It is a personal representation of experiences, observations, and thinking - an integral part of the process of doing scientific work. In this session, learn how to get started with science notebooks using a process developed by FOSS and other middle school teachers from across the country. Free materials!

Bill Metz, Kip Bisignano - Delta Education

Moving from Misconceptions to Conceptual Change

What's In Your Science Teaching Toolbox

General Science

3333make meaning out of that information. The following workshop investigates how these inaccuracies might occur and what strategies teachers might employ to help students move toward conceptual change.

Bill Metz

Performance Based Science Tasks

What's In Your Science Teaching Toolbox

General Science

Use a photo or select a photo from the National Geographic Photo Gallery site. Show Piece A to students. Students complete tasks 1 and 2 on the worksheet. Show the Piece B to students. Students complete tasks, 1, 2 and 3. After students complete tasks 1, 2, and 3 on the worksheet the teacher reveals the entire photo. Students then complete tasks 4 & 5. This task is designed to assess students' observation and prediction/infering skills across content areas & can be used multiple times.

Jeff Matriccino

Port to Port: Exploring the NEW Estuaries 101 Middle School

What's In Your Science Teaching Toolbox

General Science

Discover what estuaries are, how humans impact them, and how your students can become stewards of these ecosystems. Estuaries 101 is a new curriculum of 15 middle school activities designed by the education coordinators of the National Estuarine Research Reserve System (NERRS). Explore the new Estuaries 101 curriculum, the National Estuarine Research Reserve, and dig deeper into two of the activities, Port to Port and Seasonal Swings.

Sarah McGuire - Chesapeake Bay National Estuarine Research Reserve in Virginia

Problem-Based Learning Across the PreK-5 Curricula

What's In Your Science Teaching Toolbox

General Science

Do you want to use your students' natural curiosity and energy to teach EVERYTHING? Get ready for an interactive, problem-based learning workshop that integrates science, math, engineering, language arts and social studies into one unit. We will address the Virginia and Next Generation Science Standards. You will leave this session with problem-based learning samples and hands-on activities that will turn your preK-5 students into scientists.

Leslie Whiteman, Trina Spencer, Pamela Aerni - Virginia State University

QR-Codes in the Classroom

What's In Your Science Teaching Toolbox

General Science

What are these cryptic squares and why would I want to use them in my (earth) science classroom? This BYOD (bring your own device) workshop will explore some of the uses of QR-Code tags to enhance learning and bring the printed page alive. Smart device with internet connection is necessary for this workshop.

B.H. Snellings

What's in Your Science Teaching Toolbox Strand

Reading? Writing? I thought this was science class...

Discover how reading and writing can be used to help students become active participants during science class. Strategies covered in this session will give teachers an opportunity to discover student misconceptions, make demonstrations more meaningful, teach experimental design, and effectively review material before tests and quizzes. Although most of the activities presented are geared towards middle school students, they can easily be adapted for any grade level.

What's In Your Science Teaching Toolbox

General Science

Melissa Brichacek

Science Notebooks: Getting Started

A student's science notebook should be a personal record of learning: a place to record and organize observations and data. In a student-centered notebook, students generate a sequential exposition of their reasoning and conclusions that relates to the data they record. The FOSS development team has worked with teachers across the country to develop this approach. In this session we share how science notebooks can help you meet many SOLs across the curriculum.

What's In Your Science Teaching Toolbox

General Science

Leslie Lausten, Sherrie Roland, Kip Bisiagno - Delta Education; FOSS

Science Notebooks: Next Step Strategies to Move Learning Forward

How do you turn those incomplete or incorrect student responses into critical science questions and finally into opportunities for moving students learning forward? How can you support the student in taking ownership of their learning? In this session, we identify easy-to-use, yet effective research-based strategies, next steps and scaffolds, developed by FOSS, for helping students "get it right". Find out what LOL really means!

What's In Your Science Teaching Toolbox

General Science

Sherrie Roland, Leslie Lausten, Kip Bisiagno - Delta Education

Science on Stage: Science Reader's Theater

Feeling pushed for time? Trying to make every minute count? Reader's theater can build science content knowledge and vocabulary while improving fluency, comprehension, & oral language skills. They make perfect interdisciplinary or DI lessons that appeal to diverse learners, giving them an authentic reason to read and re-read. Learn where to find & how to use, adapt and write your own scripts. Participants will leave with scripts and online resources for grades 3-8.

What's In Your Science Teaching Toolbox

General Science

Kathy Applebee

Secondary Problem-based Learning Share Session

Looking for a new way to spice up that old science unit? Come and explore the benefits of incorporating Problem-based Learning into your secondary science classroom at our poster share session.

What's In Your Science Teaching Toolbox

General Science

Suzanne Donnelly, Jacob King Carly, Martin Ashley - Longwood University

So You've Got a Job.... Now What?!!

Tips and tricks from veteran science teachers designed to help rookies enjoy a successful transition to the classroom. Topics to be addressed will include classroom management and organization, using DOE resources, building rapport with colleagues, conducting a successful parent conference, and, in general, what has worked for us.

What's In Your Science Teaching Toolbox

General Science

Emily Brown, Babette Nuckolls, Samantha Starkey

Student Researchers: Increasing the Validity of Projects

Just as they should, beginning researchers gravitate to commonly available materials. Too often, the independent and dependent variables they choose reflect little understanding of underlying scientific principles. Explore proven strategies for helping students identify important information they need to learn before finalizing an experimental design. Strategies focus on typical categories of variables: organisms, chemicals, energy and processes. Increased knowledge equals increased validity!

What's In Your Science Teaching Toolbox

General Science

Julia Cothron

Student Researchers: Increasing the Validity of Projects

Just as they should, beginning researchers gravitate to commonly available materials. Too often, the independent and dependent variables they choose reflect little understanding of underlying scientific principles. Explore proven strategies for helping students identify important information they need to learn before finalizing an experimental design. Strategies focus on typical categories of variables: organisms, chemicals, energy and processes. Increased knowledge equals increased validity!

What's In Your Science Teaching Toolbox

General Science

Julia Cothron

Teaching and Learning about Variables in Science

This activity-based presentation will begin with a review of the integrated science process skills. These are higher-order skills that make use of some or all of the basic science process skills. The first of the integrated skill is investigating variables. In science, a variable is anything that can change in an experiment.

What's In Your Science Teaching Toolbox

General Science

Scott Watson - Liberty University School of Education

Using the TI-nspire and Probeware in the Science Classroom

This workshop is designed to be a hands-on training session on how to incorporate the TI-nspire, probeware, and Vernier software into the science classroom. Learn new science activities and labs, as well as how to transform your current science lessons to incorporate real-time data collection

What's In Your Science Teaching Toolbox

General Science

Beth Cook

VISTA Elementary Share A Thon

Teachers attending the MASON, W&M, and VCU Elementary Science Institute will share problem-based units they developed during their 2012 summer institute, as well as instructional units their school teams created to engage the students in their classrooms. Experience and pick up ideas to conduct your own PBL units.

What's In Your Science Teaching Toolbox

General Science

Nancy Alexander, Jennifer Mosser, Anne Mannarino, Sandra Joy - Virginia Commonwealth University

VISTA Secondary Teachers Share PBLs

Teachers participating in the Secondary Science Program of VISTA will share their problem-based units. Find out how their units are progressing, how their students are reacting, and hints for your own PBL units.

What's In Your Science Teaching Toolbox

General Science

Elizabeth Edmondson, Mollianne Logerwell - Virginia Commonwealth University

What's in Your Science Teaching Toolbox Strand / What's in Your Science Strand

What's in the Bag? Formulating Hypotheses and Predictions

What's In Your Science Teaching Toolbox

General Science

Beginning with kindergarten, students are asked to plan and conduct scientific investigations. An important part of this process is making observations, formulating hypotheses and making predictions. What is a hypothesis? Is a prediction the same as a hypothesis? We will answer these questions and learn a very simple and effective method to teach students at all grade levels the initial process of investigation design.

Candace Lutzow-Felling, State Arboretum of Virginia

Writing RAFTs to Differentiate Instruction in Science

What's In Your Science Teaching Toolbox

General Science

VDGIF will discuss the steps that teachers can take to allow scientific research and observation within the classroom. Topics will include an overview biological impact of species research in the classroom, purchasing certain species via VDGIF permit and a review of permits available through VDGIF. Additionally, staff will discuss out-of-state biological supply companies that offer animals for sale to teacher where in some cases the species are either protected or banned by VDGIF regulations.

James Husband, Shirl Dressler, Ed Steinkoenig, Susan Watson - Virginia Department of Game & Inland Fisheries

Angry Birds in the Physics Classroom

What's In Your Science?

Physics/Physical Science

BYOT! To encourage student modeling of physics in and outside the physics classroom, my students used the \$2.99 Vernier Video Physics app and a free download of Angry Birds on their personal or school set of iPods to model projectile motion, both in the real world and in the virtual world of Angry Birds. Participants will have the opportunity to walk through the same steps the students would to experience first hand the advantages and difficulties using this technology in a classroom setting.

Cynthia Hardesty, Richard Siebigerth

Chemistry and the Atom: Fun with Atom Building Games!

What's In Your Science?

Physics/Physical Science

Our understanding of matter is so abstract that students have a hard time making sense of these fascinating concepts. In this workshop, you will experience innovative games and activities that give students with different learning styles opportunities to explore and grasp atomic structure and the periodic table.

Erik Benton - CPO Science

Fun and Physics with Rube Goldberg

What's In Your Science?

Physics/Physical Science

Who's Rube Goldberg and how can he help teach the physics of motion? Come learn about the man who built a better mousetrap while engaging in a problem-based, hands-on activity designed to help your students think outside the box and apply the physics concepts taught in the classroom. Participants will build a Rube Goldberg machine, apply the concepts of energy transfer, learn how to use wikis as an assessment tool, and receive some practical ideas to use back in the classroom.

Kristine Mitchell

Harmonic Motion and Hooke's Law

What's In Your Science?

Physics/Physical Science

CPO's Springs and Swing. Use CPO Science's new springs and Swings to explore the concepts of harmonic motion, oscillation, natural frequency, resonance, and Hooke's Law. This new versatile piece of equipment uses a swinging pendulum, two different extension springs and one compression spring to make observations, measurements, and predictions in a hands-on investigation activity.

Erik Benton - CPO Science

Mechanics Buffett

What's In Your Science?

Physics/Physical Science

An interactive exhibit and roundtable for elementary school teachers hosted by the Virginia Instructors of Physics. The exhibit will include hands-on activities that demonstrate the effects of forces and the use of simple machines. Guests can sample multiple activities based on their interests and ask questions during the roundtable session at the end of the exhibit. "Recipe cards" will also be provided as part of the buffet.

Lydia De Jesus, Margaret Greene

Optics with Light and Color

What's In Your Science?

Physics/Physical Science

Series of EnLIGHTening Experiments! Experience Optics with Light and Color kit, with LED flashlights, filters, laser and more. Try color mixing, relate it to human vision, and see different spectrums of light with diffraction glasses. See the phenomena of internal reflection by shining a laser through a prism and tracing incident and refracted rays. Investigate the differences between speed and velocity in this hands-on, probeware-based workshop featuring PASCO carts and PASTrack. Your hands-on experience will include using one of PASCO's standards-based SPARKlabs to improve student understanding of motion, which is a foundation topic in the study of physics and physical science. Additional activities will be demonstrated.

Erik Benton - CPO Science

Physics & Physical Science: Investigating Motion

What's In Your Science?

Physics/Physical Science

Investigate the differences between speed and velocity in this hands-on, probeware-based workshop featuring PASCO carts and PASTrack. Your hands-on experience will include using one of PASCO's standards-based SPARKlabs to improve student understanding of motion, which is a foundation topic in the study of physics and physical science. Additional activities will be demonstrated.

Carla Johnson - PASCO

Physics Activity Potpourri

What's In Your Science?

Physics/Physical Science

Several teachers from the Virginia Instructors of Physics will share a lab/demonstration, handouts and or activity that they have successfully used in class. The presenters will each occupy a table with the stuff out to demonstrate. Participants will walk around the room to visit, collect handouts, and talk with the teachers about their materials. The setting is informal so come by any time during the scheduled period.

Tony Wayne

VIP Share Session

What's In Your Science?

Physics/Physical Science

Members of the Virginia Instructors of Physics share ideas and lab activities that they have recently incorporated into the classroom. Come by to see what's new and pick up innovative ideas for labs! This session is a great way to connect with other physics teachers and to re-energize your teaching. VIP is a less than non-profit organization sponsored by the University of Virginia. It is an organization for all levels of physics and physical science education in the state of Virginia.

Bill Chamblee, Mark Dodge

Science Professional Development Science Strand

Annual VESTA meeting and workshop

Come find out the big 5: who, what, when, where and how of the Virginia Earth Science Teachers' Association (VESTA). The Who: Teachers from around the state, from all levels and types of schools. The what: promoting the teaching of earth science in VA. The when: NOW. The Where: See above. The how: we will only succeed in our goal with your help.

Earth & Space Science

Gale Bartley, Eric Pyle

Bring the 3 R's to Science: Rigor, Relevance, and Resources

Learn how to use the 3 R's to encapsulate student growth performances. This session will focus on how science specialists in Henrico County Public Schools and Hanover County Public schools collaborated to provide performance--based assessments to 3--5 Science teachers. This session will provide multiple resources for documenting student growth aligned with the new 2010 Science SOLs and Next Generation Standards with an emphasis on raising rigor and relevance in upper elementary Science classrooms. Participants will leave with balanced assessments ideas for grades 3--5.

General Science

Kim Powell, Kim Dye

Exclusively For Preservice Teachers

As part of its mission, learn how VAST can help you while completing your licensure program and throughout your science teaching career. Local and statewide opportunities await those who are committed to improving Science Education. Door Prizes. A drawing for a conference scholarship will be made, through a generous contribution from Don Cottingham -- you must be present to be eligible to win. www.VAST.org

General Science

Suzanne Donnelly, Longwood University, Don Foss

Infusing PBL into Science Methods Courses

This multi--institutional research project examined the impact of infusing problem--based learning (PBL) into science methods. Pre--service teachers participated in PBL and then designed their own PBL units. These will be shared as well as ideas for infusing PBL into your own methods courses. Additionally, data from pre--service teacher participants will be presented and discussed. Professors from all involved institutions will share lessons learned and suggestions for the most effective use of PBL.

General Science

Kianga Thomas, Hampton U.; Patti Horne, Averette U.; Dr. Suzanne Donnelly, Longwood U.; Dr. Leslie Whiteman - VA StateU

Learning Within a Community

This session is an opportunity for college/university--based science teacher educators and other current/future teacher educators to participate in a professional learning community to encourage each other in developing best practices for preparing elementary, middle, and high school science teachers. Come share how you incorporate inquiry methods into your courses, and engage in a lively roundtable discussion.

General Science

Suzanne Donnelly - Longwood University

Let Your Voice Be Heard

The federal government is in the process of reauthorizing the Elementary and Secondary Education Act (ESEA). During this time of reauthorization, policy makers are making decisions that could ultimately affect the teaching practices of science teachers across the nation. The presentation is geared towards encouraging teachers to engage in the political process of public policy. State & local policy issues will also be addressed.

General Science

Justin Brosnahan

Natural Disaster: When Science Takes your Classroom

Teachers are very good at planning. We write lesson plans, plan assessment schedules, plan for parent conferences, but we never plan on a tornado. In this session we will share lessons learned on how to recover from a natural disaster; from dealing with stressed out administration, filling out insurance claim forms, recovering lost computer files, and documenting personal belongings in the classroom.

General Science

Craig Doolittle, Naomi Mani

Programs offered by the Center for Excellence in Education

The Center for Excellence in Education will present information on the Center's three programs: the Research Science Institute (RSI) and the USA Biology Olympiad (USABO) for high school students, and the Teacher Enrichment Program (TEP), CEE's newest program for high school science and humanities teachers. CEE programs are offered cost-- free to all participants and are designed to assure U.S. innovation, competitiveness, and international collaboration among the world's future leaders.

General Science

Natasha Schuh-Nuhfer, Kathryn Hanson, Deanne Barnett, - Center for Excellence in Education

Writing RAFTs to Differentiate Instruction in Science

The purpose of this course will be to encourage teachers to develop their own RAFT activities in order to improve student engagement in science. RAFT (Role, Audience, Format, Topic) activities are a fun way to differentiate instruction for students of varying academic abilities OR different learning modalities. We will introduce RAFT activities that we have used in our own classes as examples, then encourage our attendees to propose new RAFT ideas of their own to share with the class.

The most up-to-date information for the PDI will be on the VAST web-site.

<http://www.vast.org>

Register soon! Field trips and Pre-PDI Institutes and Workshops may fill up fast or be cancelled if not enough people register.

2012 VAST Professional Development Institute

Williamsburg, November 7-10, 2012

Designing Your Way Through Science.

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PDI 2012: Meet Your Regional Director for a Chance to Win a New Vernier LabQuest® 2 !

Regional Directors will be introduced at the Friday morning General Session (2). They will be giving out a special ticket for a drawing for the Vernier LabQuest®2. Take your ticket to the Vernier Booth, get a demonstration of the LabQuest®2 and you are entered to win! The drawing will be held at the last General Session (5) on Saturday afternoon.



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Openings Still Available for Free Training for New Middle, High School Science Teachers

The Virginia Initiative for Science Teaching and Achievement (VISTA) helps make new science teachers' first experiences positive. This statewide partnership offers two years of free, intensive professional development, annual \$1000 stipends, supportive coaching, and graduate credits to first- and second-year secondary science teachers. The goal is to help ensure success for new teachers early in their teaching careers and improve their students' performance levels. Openings are still available! Apply online at <http://vista.gmu.edu/middle>.

Campers, Parents, Teachers Report on Successful VISTA Science Camps

More than 100 teachers and 150 students took part in the VISTA Elementary Science Institute this summer. The program was being offered at three sites: George Mason University, the College of William and Mary, and Virginia Commonwealth University. Teachers and local elementary students studied the natural world and beyond through problem-solving related to this summer's theme, Space Exploration.

The VISTA campers, all 4th through 6th graders from local schools, were enthusiastic about what they learned this year. Cao-Linh Pham, a rising 5th grader at Belmont Elementary School in Prince William County Schools, said, "I learned about space junk and the different layers of the atmosphere. We learned about mass, size, and height, water displacement, and lots of other stuff." His camp experience is making him reconsider his plans for the future. "I learned that math and science are much more interesting than what they look to be. All of the hands-on experiments made it more interesting. In school, we usually just learn it in a textbook. Now, I think I might want to be a scientist, but I didn't think so before camp."

Ann Heidig teaches 3rd and 4th grade at Taylor Elementary School in Arlington County. She is excited about applying what she learned during camp in the coming school year. "I've seen a big difference in the kids over the course of the two-week camp. Even the more reluctant kids became more engaged. Even if they had trouble paying attention at first, they quickly turned it around and began actively participating in projects," she says. "My head is spinning with everything I've learned in this camp. I wake up every night with an idea for a new problem-based learning unit, who I can get involved in it, and how I can sell the idea to the other teachers I work with. This is my 27th year teaching, so it's really saying something that I'm so excited about this. Rather than handing kids cookbook lab experiments, the kids are designing the experiments themselves. They are transformed by it. Their self-esteem rises, they get involved, and they realize that science is something they can do."

Parents attended the last day of science camp to see the campers' final presentations and participate in a campus tour and meetings with college advisors. Many reported that their kids have been coming home excited about the camp and talking about the problems they were trying to solve. "My son has been very excited, coming home from camp and talking about it every afternoon. He normally doesn't want to talk much about school, so this has been a big change," says Yolanda Hands, whose son Reginald is a rising sixth grader in Prince William County Schools.

During the institutes, teachers receive intensive science education professional development focused on problem-based learning. They collaborate with leading scientists, educational experts, and staff at each university to build fundamental knowledge of inquiry and the nature of science as a part of the VISTA problem-based learning model. Teachers then get an opportunity to practice the new techniques with students during two-week science camps focused around investigating and measuring human impacts on the environment at their specific site. The camps provide teachers the time to gain experience using the innovative problem-based science methods they learn with students before returning and implementing these strategies into their own classrooms.

To learn more, visit <http://vista.gmu.edu/elementary> or follow day-to-day camp activities at <http://facebook.com/vistascience>.

VISTA Facebook Pages Offer Inside Looks at Summer Camps, Other Programs

VISTA has launched new Facebook pages that will be following the day-to-day activities of our Elementary Science Institute, Secondary Teacher Program, New Science Coordinators Academy, and Science Education Faculty Academy over the coming year. To follow VISTA, log onto our page and "Like" us at www.facebook.com/vistascience. You can also follow activities at the other VISTA sites by searching Facebook for "VISTA at VCU" or "V.I.S.T.A. College of William & Mary."

VISTA College Science Education Faculty Academy Recruiting Participants

VISTA is currently recruiting participants for the Science Education Faculty Academy in the coming year. The program offers science methods professors at the collegiate level in Virginia the following forms of support:

- A five-day academy that focuses on learning about new research, sharing effective teaching strategies, problem-solving, and networking. (Lunch is provided. Room, board, and travel will be provided/reimbursed for those who are out-of-town.)
- A \$2000 stipend after documentation of follow-up efforts.
- Conference registration, lodging, transportation, and meals for attending the Virginia Science Education Leadership Association (VSELA) conference.
- Membership in an online private social networking group targeted on your concerns.

For details, contact Patrick Linehan at plinehan@gmu.edu or



“Working Together to Promote Quality Science Education”

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

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Save the Date!
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**2012 Virginia Association of Biology
Teachers (VABT)
Fall Conference**

8:30 am (registration begins) Sessions 9-3pm
Saturday, September 15, 2012

Conference Location:
Victory Elementary School
2828 Greenwood Dr.
Portsmouth, VA 23701
Phone: 757.393.8806

Sessions will be offered for elementary, middle, high-school, and college biology/life science teachers. Scheduled sessions include At least one session will include the opportunity to exchange labs and active engagement strategies for instruction that will enhance the rigor in your classroom. Participants are asked to bring one active engagement strategy or laboratory activity to share during that "Share-shop Session".

\$20.00 conference fee includes 2012-2013 VABT membership*

*\$5.00 discount for pre-service teachers

To register, email Kathy Frame at **chuckframe@aol.com**. Registrations received by September 10th will include a FREE boxed lunch.

We look forward to seeing you there!

**Chandra: Loaning UVa's
Telescopes to Educators**

The University of Virginia Department of Astronomy is loaning telescopes to teachers in Virginia and providing training on how to use them. For a small fee of \$50.00, teachers can borrow one of the Meade 8-inch Schmidt-Cassegrain telescopes for seven weeks and use it to host an evening star party at their school, to conduct experiments with their students, and other projects. Initial funding for this project was provided by an education and public outreach supplemental grant from the Chandra X-ray Center which is operated for NASA by the Smithsonian Astrophysical

Observatory. Partial funding for the project for 2012 and 2013 is being provided by Friends of the McCormick Observatory.

Orientation Dates at the McCormick Observatory in Charlottesville for 2012 and 2013:

Saturdays September 15, November 17,
January 19, and March 30

The project is managed by Steve Layman.
For more information please email at
slayman2528@comcast.net

Flinn's First-Year Teacher Survival Kit
A Free Gift for New and
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The First-Year Teacher Kit includes exciting demonstration ideas, safety posters, a reproducible safety contract and money-saving coupons. It also contains a Flinn Scientific Catalog/Reference Manual Sampler, that features safety data on proper storage, handling and disposal of laboratory chemicals.

Teachers only can request Flinn's First-Year Teacher Survival Kit from: **Flinn Scientific, Inc. P.O. Box 219, Batavia, IL 60510**
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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

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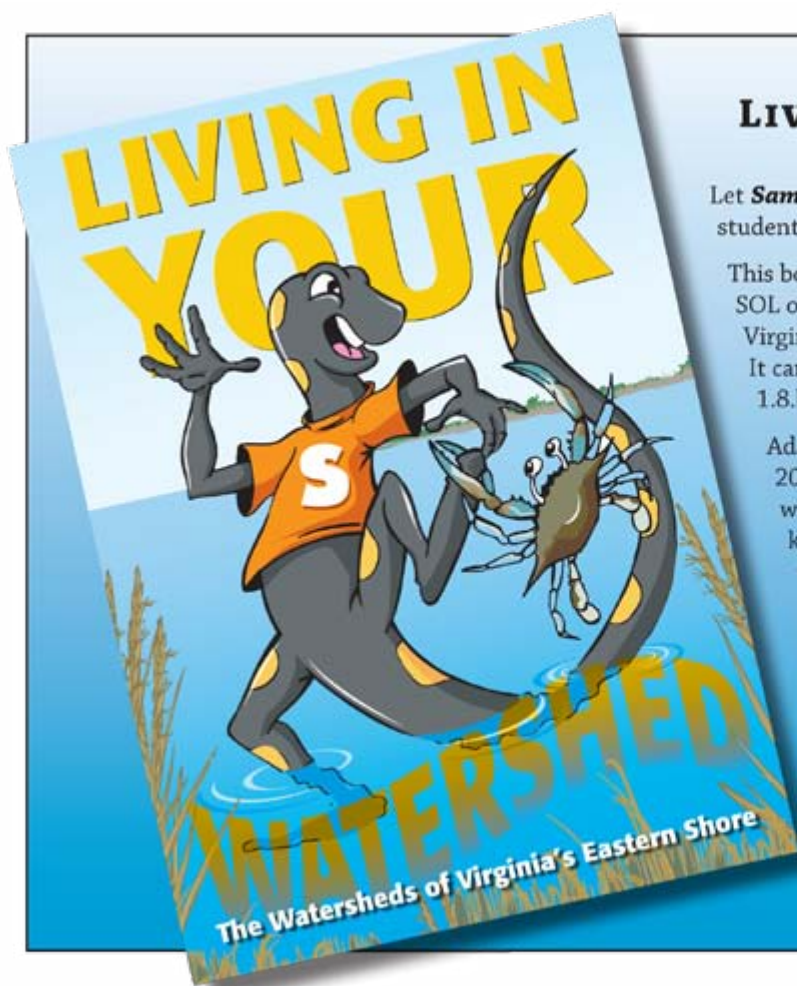
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Let **Sammy the Spotted Salamander** guide you and your students to an understanding of your local watersheds.

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

July 20, 2012.

**The next issue of *The Science Educator* will be a hard copy issue, mailed to you by the end of August.
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

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

VAST is a nonprofit organization by educators for educators.

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



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!!!