Engage! Explore! Empower!
2009 VAST Professional Development Institute
Hilton Washington Dulles Airport
Herndon, Virginia

Thursday, November 5, 2009

9:00 am - 4:00 pm	Field Trip: Municipal Waste Facility, "Journey into Municipal Solid Waste with Project Learning Tree"
1:00 pm - 3:00 pm	FOSS Middle School Earth and Life Science Institute
2:00 pm - 6:00 pm	Registration Open (Belmont Lobby)
4:30 pm - 5:30 pm	**VSELA Reception & Exhibit Hall Open** (Belmont Ballroom)
5:30 pm - 6:30 pm	Ticketed Dinner (Red Fox Room)
6:40 pm - 7:40 pm	**General Session #1: Dr. Pat Shane, President of the NSTA** (Potomac Ballroom) *Sponsored by VSELA* Three R's of Science Teacher Retention: Resources, Respect, and Renewal
8:00 pm - 11:00 pm	Field Trip: Night Tour of the National Monuments (Depart from the Belmont Lobby)

Friday, November 6, 2009

7:00 am - 6:00 pm	Registration Open (Belmont Lobby)
7:00 am - 7:30 am	Continental Breakfast (Belmont Lobby)
8:00 am - 9:00 am	**General Session #2**: **Dr. Patricia Kelley** (Potomac Ballroom) *Sponsored by VSELA* Evolution and Creation: Conflicting or Compatible?
9:00 am - 5:00 pm	Exhibit Hall Open
9:00 am - 12:00 noon	Field Trip: Behind the Scenes at Dulles Airport (Depart from the Belmont Lobby)
9:00 am - 1:00 pm	Field Trip: US Botanic Garden Conservancy on the Capitol Grounds (Depart from the Belmont Lobby)
9:00 am - 1:00 pm	Field Trip: Koshland Museum (Depart from the Belmont Lobby)
9:00 am - 1:00 pm	Field Trip: Geology of Great Falls Park (Depart from the Belmont Lobby)
9:00 am - 1:00 pm	Field Trip: Chesapeake Bay Foundation's Field Experience (Depart from the Belmont Lobby)
9:15 am - 10:05 am	**Concurrent Session A**
10:20 am - 11:10 am	**Concurrent Session B**
11:25 am - 12:15 pm	**Concurrent Session C**
12:15 pm - 2:00 pm	Ticketed Buffet Lunch (Red Fox Room) and Ticketed Box Lunch Pick-up (Belmont Lobby)
12:15 pm - 1:30 pm	Visit the Exhibit Hall
1:30 pm - 2:10 pm	**Concurrent Session D**
2:25 pm - 3:15 pm	**Concurrent Session E**
3:30 pm - 4:20 pm	**Concurrent Session F**
5:15 pm - 6:30 pm	Ticketed Dinner (Red Fox Room)
6:45 pm - 8:00 pm	**Awards Ceremony & General Session #3** (Potomac Ballroom) Chesapeake Bay Foundation Virginia Educators of the Year Award VAST Awards Recognition of Presidential Awards for Excellence in Mathematics and Science Teaching State Finalists **General Session #3: Dr. Sharon Neal, Chemistry Professor, University of Delaware** Congratulations...If This Is How You Want to Spend Your Life!
8:15 pm - 11:00 pm	Dance/Auction (Potomac Ballroom)

Saturday, November 7, 2009

7:00 am - 4:00 pm	Registration Open
7:00 am - 7:30 am	Continental Breakfast (Belmont Lobby)
7:45 am - 9:00 am	**Annual Business Meeting & General Session #4** (Potomac Ballroom) **General Session #4:** Karst, White-Nose Syndrome in Bats, and the Importance of Environmental Education **Panelists: Wil Orndorff and Carol Zokaites, Virginia Department of Conservation and Recreation** **Moderator: Kathy McGlauflin, Senior Vice President of Education, American Forest Foundation**
9:00 am - 1:30 pm	Exhibit Hall Open
9:00 am - 1:00 pm	Field Trip: Private Tour of the Arlington Cemetery (Depart from the Belmont Lobby)
9:30 am - 10:20 am	**Concurrent Session G**
10:35 am - 11:25 am	**Concurrent Session H**
11:30 am - 1:45 pm	Ticketed Buffet Lunch (Red Fox Room) and Ticketed Box Lunch Pick-up (Belmont Lobby)
12:00 noon - 12:50 pm	**Concurrent Session I**
1:05 pm - 1:55 pm	**Concurrent Session J**
2:10 pm - 3:10 pm	**General Session #5: Mad Science** and Door Prizes (Potomac Ballroom)
3:30 pm - 5:30 pm	**Udvar-Hazy Museum Tour** (Depart from the Belmont Lobby) ***Sponsored by*** *Virginia Space Grant Consortium*

General Session Speakers

General Session I: Three Rs of Science Teacher Retention: Resources, Respect, and Renewal
Thursday, November 5th, 2009, 6:40 PM – 7:40 PM
Hilton Washington Dulles Airport ~ Potomac Ballroom

Dr. Pat Shane, President of the NSTA, will kick off the conference with a talk about the ***Three Rs of Science Teacher Retention: Resources, Respect, and Renewal***. Dr. Shane is Associate Director of the Center for Mathematics and Science Education (CMSE) at the University of North Carolina/Chapel Hill. She is a former middle school teacher, currently the Executive Director of NCSELA (North Carolina Science Education Leadership Association).

General Session II: Evolution and Creation: Conflicting or Compatible?
Friday, November 6th, 2009, 8:00 AM – 9:00 AM
Hilton Washington Dulles Airport ~ Potomac Ballroom

Friday morning, geologist Dr. Patricia Kelley will share her research on mollusc evolution in her speech titled, ***Evolution and Creation: Conflicting or Compatible?*** Dr. Kelley will follow her keynote address with a workshop during the concurrent sessions, where she and workshop attendees will address Teaching Evolution with Integrity and Sensitivity.

General Session III: Congratulations, if this is how you want to spend your life!
Friday, November 6th, 2009, 7:00 PM – 8:00 PM
Hilton Washington Dulles Airport ~ Potomac Ballroom

Have you talked with people who think science research is a tedious and boring enterprise? Maybe your students even think this! Dr. Sharon Neal was beginning her career in chemistry research and college teaching when she was greeted by the words in the title, from a well-meaning future colleague. The ambivalence of others at her choice of career came to illustrate for her the misconceptions people have about doing science, and about what science is. She will talk about the dichotomies that characterize her life as a scientist, for example, the thrill of uncovering nature's secrets one minute, the next minute dealing with uncooperative equipment. She will recount a few recollections that illustrate the mismatch between society's ideas of the tedium of science research, and her own personal experiences with things that make you go "Wow!"

General Session IV: Karst, White-Nose Syndrome in Bats, and the Importance of Environmental Education
Saturday, November 7th, 2009, 8:00 AM – 9:00 AM
Hilton Washington Dulles Airport ~ Potomac Ballroom

On Saturday morning our speakers will emphasize how important ***environmental education*** is in our world today. Dr. Kathy McGlauflin, Director of the Project Learning Tree program at the American Forest Foundation, will moderate a panel of speakers who will tell us about a current ecological crisis involving ***karst topography*** and bats: white nose syndrome. Wil Orndorff, with the Virginia Department of Conservation & Recreation, and one of the first scientists to discover that white-nose syndrome had reached the caves of Virginia, will discuss karst topography, its geology and ecology, and Carol Zokaites will share the latest research on the ***White-Nose Syndrome*** and how the ecological system of large segments of Virginia may be affected. Zokaites will follow the General Session with two workshops during the concurrent sessions on Saturday morning.

General Session V: Mad Science!
Saturday, November 7th, 2009, 2:10 PM – 3:10 PM
Hilton Washington Dulles Airport ~ Potomac Ballroom

The concluding speakers for the 2009 VAST PDI on Saturday afternoon will be the performance troupe, Mad Science. This presentation will include fireworks (yes, fireworks!), bubbling potions, and various magic tricks. They also tie the scientific process into their show, which makes this educational and a great event for the child in all of us!

Special Event at 2009 PDI
Come one! Come all!

Friday Night Science Auction and Dance in the Potomac Ballroom

Where else can you enjoy your favorite tunes and bid on neat science supplies with money you 'earned' by attending the VAST PDI IN THE SAME PLACE ON THE SAME EVENING? Yes, we're auctioning off donated items from science teachers all over the state of Virginia. To bid, simply use the VAST bucks you'll find in your PDI bag of goodies.

There is seldom a better floor show for a group of science teachers than to see them bidding against each other for that one thing they could really use. The best part of all is that to participate, it will cost you exactly nothing! Besides, real money isn't good at the auction.

In between the bidding, join us in the Potomac Ballroom for some dancing, sponsored by the NSTA Student chapters in Virginia's higher education institutions. It's a DJ'ed affair, so you won't be able to help yourself!

Dance…bid….dance…bid…

Alternate the fun from 8:15 PM until 11:00 PM!

VAST Bucks

Everybody will find in the registration packet *VAST Bucks*, good only at the auction to be held Friday night, November 6th, during breaks in the dancing.

Earning more VAST Bucks

All that you have to do to "earn" VAST Bucks is to

(a) register for the conference,
(b) visit the exhibitors during the open hours of the Exhibit Hall up through Friday evening,
(c) take advantage of various activities noted in the program, or
(d) donate some items for the auction.

Each of these actions on your part will gain you more VAST Bucks to spend!

FAQ's

- *Where do I take my donations?* Go to the Potomac Ballroom between 4:00 PM and 6:00 PM on Friday, and leave your donation with a member of the auction committee.
- *What are the donation rules?* Do read the auction rules in the last newsletter: no chemicals, nothing un-useable, nothing unsafe, and be sure to have permission to donate the item.
- *What do I do if I win something?* Make sure that anything you buy, you can carry away. We don't deliver and we don't store, so when you buy it, you take it!
- *When and where will the dance be held?* The dance will be held in the same room as the auction, between bidding.
- *What kind of music will I hear?* The NSTA Student Chapters are aiming for a popular mix of dance-able tunes from the 60's, '70's and onward. Definitely something for everyone!
- *Will VAST members really dance?* According to anthropologists, *sciencia teacherus* is know for its Terpsichorean ability. In other words, YES!

See you at the Friday Night Science Auction and Dance on November 6, 2009!

VAST Professional Development Institute

Concurrent Sessions

AB-122 **Simple Machines: Sail Cars and Wind Turbines** Hands-on
9:15-11:10 Investigate and Understand Grades 3 - 5 Physics/Physical Science
Parlor 122 Lynn Riggs and Kassia Omohundro Wedekind, Bailey's Elementary School, Fairfax County

Explore the power of wind as you extend your knowledge of simple machines by engineering sail cars and wind turbines. Integrate measurement and data collection with simple machine investigations.

A-136 **Engineering in the Middle School Science Curriculum** Hands-on
9:15-10:05 Grades 6 - 8 General Science
Parlor 136 Kristine Vester and David Rhyne, MathScience Innovation Center, Richmond

Looking for a different way to "grab" your students' interest and attention, then engineering is the choice for you. Engineering topics provide a "real-life" application to a student's learning, while encouraging a student's interest in engineering fields. Learn how to integrate engineering and mathematics into your science classroom while meeting the goals and standards of learning set by the Department of Education for the 21st Century.

A-222 **Pollution Solutions and Litter Prevention** Hands-on
9:15-10:05 Inquiry in the Field Pre K - 8 Environmental Science
Parlor 222 Sheila Barnett, Virginia Office of Environmental Education www.deq.state.va.us/education/polsol.html

Litter prevention can be used to teach critical thinking and inquiry in science, language arts, math, and more. Children are naturally interested in the environment around them. Learn how litter is harmful and empower your students to have a positive impact within their community. You will receive resources to conduct meaninful investigations and teach respect for other living organisms.

A-236 **Start Your Engines: Investigating Motion!** Hands-on
9:15-10:05 Investigate and Understand Grades 3 - 5 Physics/Physical Science
Parlor 236 Dawn Renee Wilcox, Spotsylvania County School Division; Shannon Roberts, Cedar Forest Elementary School, Spotsylvania County

Join us as we show you how to help your young scientists understand force, motion, and energy. This session gives participants the opportunity to design and construct an investigation to determine the effects of friction on moving objects that involves activity and direct experience. Create a simple hands-on motion kit that you can take back to your classroom that integrated science vocabulary with other subjects like mathematics, reading, and language arts.

A-322 **Creative Thinking in Earth Science** Demonstration
9:15-10:05 Investigate and Understand Grades 3 - 12 Earth/Space Science
Parlor 322 Elizabeth Hobson, School of International Studies at Meadowbrook, Norfolk

Students walk into the classroom insisting they are not science people. How do we get their attention? Creative thinking is key. Ways to put a creative spin on severe weather, astronomy, rocks, minerals, earthquakes and more will be covered. Once students are engaged, they are open to scientific concepts. Activities that I will share include storm autobiographies, star (celebrity) stories, rock obituaries, rock candy, mineral advertisements, and more.

A-415 **Bluebirds and Middle School Science** Demonstration
9:15-10:05 Inquiry in the Field Grades 6 - 8 Environmental Science
Suite 415 Craig Vann, Andrew Bathke, and Belinda Casto-Landolt, Rodney Thompson Middle School, Stafford County

A bluebird habitat is being observed and recorded by students at Rodney Thompson Middle School. The courtyard habitat includes a nest box with a camera that students can log into and observe. The native plant habitat lessens the amount of grass that is being cut (reducing the carbon footprint); lowers the amount of nitrogen seeping into the watershed, and the classrooms that are facing this courtyard collect data that is added to the Cornell Lab of Ornithology.

A-416 **Science and Language Arts: Hand in Hand** Hands-on
9:15-10:05 Pre K - 2 General Science
Suite 416 Nicole Groeneweg, Anthony T. Lane Elementary School, Fairfax County

Can't fit it all in? Need tips for your students to master nonfiction science texts? Incorporate your science learning into your reading and writing workshops. Participants will learn techniques for using science trade books in Language Arts. You can teach it all!

A-417 **Let Go and Let Your Students Lead!** Hands-on
9:15-10:05 Investigate and Understand Pre K - 5 General Science
Suite 417 Melissa West, Widewater Elementary School, Arlington County; Sherri Roland, Grafton Elementary School, Arlington County

Student discovery can be a very powerful and memorable learning experience, but how can we as teachers ensure that these moments are occuring in our classrooms? Have you tried inquiry based lessons and felt unsuccessful? Join us to learn great strategies you can use from lesson delivery and management to classroom climate. We are looking forward to helping your students Engage! Explore! and Empower! themselves and others!

A-476 **SCRATCH Fever: Science & Math in Scratch Programming** Hands-on
9:15-10:05 Technology Grades 3 - 8 General Science
Suite 476 Cheri Kelleher and Gail Warren, MathScience Innovation Center, Richmond www.scratch.mit.edu

Engage and motivate your students by incorporating the Scratch programming language into your math or science classroom. Scratch is a free software program from the MIT media lab. This new programming language makes it easy to create interactive stories, music, art, and games while learning important computational and mathematic concepts. Kids age 8 to 99 can learn to think creatively, reason systematically, and work collaboratively. (Laptops are encouraged.) Catch the fever!

A-477 **Implementing JASON in a Real Classroom** Demonstration
9:15-10:05 Investigate and Understand Grades 6 - 8 Physics/Physical Science
Suite 477 Beth Evans, Sutherland Middle School, Albemarle County; http://www.jason.org/
Laura Stocke, University of Virginia Curry School of Education

JASON in action: how easy IS it to use this authentic, multifaceted learning model in a real classroom with SOL pressures? After participating in the 2009 summer session of the JASON Project: Infinite Potential, I am implementing it in my fall semester science classes. JASON incorporates most PS energy SOL. I plan to include the JASON curriculum as part of a cross-curricular Learning Expedition, as students conduct research, analyze data and create new energy proposals for the future.

A-478 **Teaching Classification Keys Using Simple Science Examples** Hands-on
9:15-10:05 Investigate and Understand Grades 3 - 12 General Science
Suite 478 Scott B. Watson, Liberty University School of Education

Classification is one of the basic process skills of science. It may be defined as "placing objects into groups based on their similarities or differences". Methods of grouping objects include binary classification (classification trees and keys) and serial ordering. Of those, classification keys are the most difficult to teach, and the hardest for students to understand. The purpose of this activity is to use a common mineral identification activity to teach classification keys.

A-Chrysalis **Cool Tools for Projectile Motion** Demonstration
9:15-10:05 Investigate and Understand Grades 3 - College Physics/Physical Science
Chrysalis Tony Wayne, Arbor Scientific www.arborsci.com

Attendees will see and use the Air-Powered Projectiles and the new Elasti-Launcher. These are fun, safe, and consistent alternatives to rockets. The Projectiles can be launched at different speeds and at different angles. Some even can be used in the classroom.

A-Fairfax **Student Interactive Science Notebooks** Hands-on
9:15-10:05 Investigate and Understand Pre K - Grades 5 General Science
Fairfax Anne Sywilok, Abingdon Elementary School, Arlington County; Diane Jones, Nottingham Elementary School, Arlington County

Presenters will model how to develop the science interactive notebook using the social studies "history alive" approach to learning. The interactive notebook format and hands-on activities are designed to enhance instruction and is easily adapted for all grade levels K - 5, second language, and gifted students. The first 100 in attendance will receive a CD of the activities and format demonstrated.

A-Mosby **Moon Phases Are What?** Hands-on
9:15-10:05 Investigate and Understand Grades 6 - 8 Earth/Space Science
Mosby Susan Stubbs, Chester Middle School, Chesterfield County; Margaret Stevens, Virginia Commonwealth University ACT-ESL Science Technical Advisor

Students become involved in discovering the phases by making predictions, hands-on-activities, and a lab experience. This is especially helpful for ELLs and should increase retention of the material. Join us as we demonstrate a multitude of activities to teach the phases of the moon.

A-Piedmont I **DNA Necklaces and Double Helix Models** Hands-on
9:15-10:05 Investigate and Understand Grades 9 - 12 Biology/Life Science
Piedmont I Carolina Biological Supply Company www.carolina.com

Explore new hands-on techniques for teaching DNA science to your students. Participants first extract actual DNA from their own cheek cells. They then transfer the isolated DNA to pendant tubes, which are fashioned into wearable necklaces! Finally, they construct a DNA double-helix model using color-coded plastic pieces.

A-Piedmont II **Attending the VAST PDI for the First Time?** Demonstration
9:15-10:05 Pre K - College General Science
Piedmont II Robin Curtis; Bill Stevens, Eduware, Inc www.vast.org

Is this your first VAST Professional Development Institute conference? Learn how to plan your own professional development and maximize your district's support for your professional growth plan. You will have the opportunity to bid on prizes with money you earn playing our game with Eduware, receive VAST bucks for the Friday night auction, and if you are in your first five years of teaching, you could win a complimentary registration to the 2010 VAST PDI. The free registration is made possible through an endowment established by Eduware.

2009 PDI Concurrent Sessions • Friday AM, November 6 • SESSION A - B

A-Potomac I **Teaching Evolution with Integrity and Sensitivity** Hands-on
9:15-10:05 Pre K - College General Science
Potomac I Patricia Kelley, University of North Carolina Wilmington, Department of Geography and Geology

This interactive workshop will address the teaching of evolution, including ways of dealing with controversial topics by defining what is controversial, setting course boundaries, and dealing with misconceptions. The workshop will present hands-on activities for teaching concepts related to teaching evolution (e.g., what science is and how science works, understanding deep time, radiometric dating, etc.) and will discuss key lines of evidence for evolution.

A-Potomac II **Can't Take the Heat?** Hands-on
9:15-10:05 Technology Grades 6 - College General Science
Potomac II Christopher Petrone and Vicki Clark, Virginia Sea Grant/Virginia Institute of Marine Science

Why is the ocean sometimes the warmest when the average daily air temperature starts to drop? How can buoys help us explore this question? In this session by the Bridge and COSEE-NOW, we will investigate heat capacity and its effects on our lives. We will work through a classroom activity that uses online ocean observing system data to investigate water as a thermal buffer and the practical applications this has. Participants will receive resources for using observing systems in their classroom. www.marine-ed.org/bridge

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A-Potomac III **The Nature of Science and Inquiry in Your Classroom** Hands-on
9:15-10:05 Investigate and Understand Grades 3 - 12 General Science
Potomac III Lynne Ellison, Sarah Kennelley, Tommy Edwards, and Randy Bell, University of Virginia

Learn new activities and instructional approaches specifically designed to address the Virginia SOLs on inquiry and the nature of science. These activities are easily modified to be appropriate for grades 3 through 12. They are highly engaging and encourage critical thinking, while reinforcing science process skills. All participants will receive a free CD containing activity descriptions and materials.

A-Tarara **ASK Project: Assessing Science Knowledge** Hands-on
9:15-10:05 Assessment Grades 3 - 5 General Science
Tarara Brian Campbell, Lawrence Hall of Science; Kip Bisignano, Delta Education

Assessing Science Knowledge from the Lawrence Hall of Science, UC Berkeley, was designed to define, field test, and validate effective assessment tools and techniques to be used by grade 3 - 6 classroom teachers to assess, guide, and confirm student learning in science. Guided by a synthesis of current cognitive theory and measurement principles, the assessment tools, procedures, and item banks developed provide valid and fair inferences about student achievement and effect science instruction.

A-Veritas **Engineering to Reduce the Germs** Hands-on
9:15-10:05 Investigate and Understand Grades 3 - 5 Biology/Life Science
Veritas Rhonda Hawley, MathScience Innovation Center, Richmond www.msinnovation.info

What I can't see CAN hurt me! There are worlds too small to see with the naked eye and those worlds can impact the world that we can sense directly. Share with your students the amazing nano world! Explore how bacteria can be transmitted through touch, how surfaces of different degrees of roughness can be compared in terms of their ability to harbor bacteria, and design a product to reduce the spread of germs. Virginia Standards of Learning: Science 3.1, 3.3

2009 PDI Concurrent Sessions • Friday AM, November 6 • SESSION B

BC-417 **Discovery Tree: Teaching Ecology to PreK Using Visual Models** Hands-on
10:20-12:15 Investigate and Understand pre K - 2 Biology/Life Science
Suite 417 Candace Lutzow-Felling and Emily Ford, State Arboretum of Virginia

This workshop will highlight the State Arboretum of Virginia's Pre-K "Plants and Trees" program which integrates early childhood science literature with a unique 3-Dimensional tree model to encourage aural, visual, and kinesthetic learning. The lesson covers several of Virginia's Foundation Blocks through exploratory experiences. In this workshop, we will demonstrate the tree and participants will make their own leaf shapes and tree "inhabitants" to use in their classroom.

BC-Mosby **Celestia Space Simulation Software Takes Students Into Space** Hands-on
10:20-12:15 Technology Grades 6 - College Earth/Space Science
Mosby Frank Gregorio, Osbourn Park High School, Prince William County; http://gregs-educational.info
Eric Pyle, James Madison University

A demo of high-res software that takes your students out of the classroom and up into space to individually pilot a hyperdrive spacecraft through the universe at any speed, direction and time in history. They can fly to over 400 destinations to include planets, dwarf planets, moons, comets, asteroids, spacecraft, main sequence and giant stars, black holes, pulsars, supernova, nebula, clusters, galaxies and fictional worlds. As they travel, they read and complete detailed lessons with worksheets.

BC-Piedmont I **Mammalian Organ Dissection with Carolina's Perfect Solution®** Hands-on
10:20-12:15 Investigate and Understand Grades 6 - 12 Biology/Life Science
Piedmont I Carolina Biological Supply Company www.carolina.com

Experience a far superior and safer alternative to formaldehyde with Carolina's Perfect Solution® specimens. Participants dissect a sheep brain, cow eye, pig heart, and pig kidney and observe major internal and external structures to gain a better understanding of these mammalian organs. An excellent comparative dissection with Carolina's best specimens!

BC-Tarara **Authentic Science Notebooks** Hands-on
10:20-12:15 Investigate and Understand Pre K - 8 General Science
Tarara Brian Campbell, Lawrence Hall of Science; Kip Bisignano, Delta Education www.lhsfoss.org

Join Brian Campbell, author of Science Notebooks: Writing About Inquiry, as he engages participants in inquiry investigations and the use of science notebooks. Authentic science notebooks are records of student experience, conceptual understanding and change in learning. Adaptable to any hands-on program, students interact with data collected to make sense of the science content and represent their learning through representations and written work...an embedded formal assessment for teachers.

B-136 **Get Out Of My Classroom?** Hands-on
10:20-11:10 Inquiry in the Field Grades 6 - 8 Biology/Life Science
Parlor 136 Kyle Ogburn; Michael Boyle and Toyshia Hughes, Toano Middle School, Williamsburg James City County

No budget for a field trip? This presentation is designed to empower teachers with tools and confidence to extend the teaching space into their own "great outdoors". Through lively media, we show you how to plan for school yard science activities, prepare students for effective outside learning and what to obtain in necessary, inexpensive materials to conduct labs and investigations. Participants will receive a CD which includes the presentation and ready to use outdoor labs.

B-222 **Using "Secrets of the Sequence" in Biology Classrooms** Demonstration
10:20-11:10 Technology Grades 3 - College Biology/Life Sciencee
Parlor 222 Emily Betts, Open High School, Richmond; http://www.pubinfo.vcu.edu/secretsofthesequence/
Jacqueline McDonnough, Virginia Commonwealth University

The Secrets of the Sequence video series presents cutting-edge research in human genetics. The series includes fifty short videos that are an excellent tool for teachers to incorporate new research findings into their classroom. Along with the videos are free lessons and labs that were developed by award winning classroom teachers. We will be showing some examples of the videos and lesson plans that can be used with students at various levels, from middle school to AP Biology.

B-236 **Teaching 21st Century Topics and the SOL's** Hands-on
10:20-11:10 Investigate and Understand Grades 6 - 8 Physics/Physical Science
Parlor 236 Charlene Saunders, MathScience Innovation Center, Richmond msinnovation.info

Nanotechnology, Fractals and Engineering... you've heard the terms but how do they apply to your curriculum? Investigate how to use these emerging fields in your SOL driven curriculum. Explore simple ways to enhance your lessons with nano and fractal based activities. Learn how to keep the activites you already use but change the way you present them so they are more engineering by design focussed.

B-322 **Star Struck: A Teachers' Guide to Buying and Using Telescopes** Demonstration
10:20-11:10 Technology Grades 3 - College Earth/Space Science
Parlor 322 Katherine Brown, Tyler St. Clair, Elissa Koskela, and Randy Bell, University of Virginia

This hands-on presentation is designed for teachers who wish to use telescopes to explore the night sky with their students, but don't know where to begin. We will demonstrate different telescope models and provide guidance in deciding which model is best for your individual classroom needs. Factors such as cost, optics, ease of use and other purchasing considerations will be addressed. Participants may try out a variety of telescopes and will receive a buyer's guide and a list of resources.

B-415 **Facilitating a Meaningful Watershed Experience** Hands-on
10:20-11:10 Inquiry in the Field Grades 6 - 8 Environmental Science
Suite 415 Katie Gnadt, Drew Middle School, Stafford County; Kristen Hamilton, Stafford Middle School, Stafford County

Participants will be introduced to student activities that will facilitate a meaningful watershed experience. The program will begin with identification of local watershed areas. Activities will include water chemistry, macro-invertebrate collection, erosion boxes, food web simulation, nature walk, electro-fishing discussion, and developing a schoolyard watershed. Examples of field trip planning will be discussed.

B-416 **Technology in an Inquiry-Based Elementary Science Classroom** Hands-on
10:20-11:10 Technology Pre K - 5 General Science
Suite 416 Felicia Eley, Mount Vernon Woods Elementary School, Fairfax County; Jenay Leach, Woodley Hills Math and Science Focus School, Fairfax County smarttech.com and www.dataharvest.co.uk

Do you want to learn how to integrate technology into your inquiry-based science lessons? In this session, you will learn to incorporate interactive white boards and dataloggers into a meaningful science lesson. Participants will design and execute an experiement using Easy Sense Q5 Dataloggers and perform data analysis using SMART technology. Learn how technology can enhance student-centered exploratory lessons and increase their understanding of the Virginia Standards of Learning.

B-476 **GeoSnow: Investigating the World of Snowflakes** Hands-on
10:20-11:10 Investigate and Understand Grades 3 - 8 General Science
Suite 476 Pam O'Brien, MathScience Innovation Center, Richmond

Are natural objects formed randomly or is there a pattern to how they develop? The emerging field of nanotechnology allows scientists to view the molecular world and look at how nature builds itself "from the bottom up" through the process of self-assembly. In this session we will investigate snowflake formation as well as participate in hands-on geometry activities relating to snowflake structure. You will never look at snow the same way again!

B-477 **Shadows and Clouds - A Cross-Curriculum Approach to Science** Demonstration
10:20-11:10 Investigate and Understand Pre K - Grades 5 General Science
Suite 477 Michelle Avda, Lionden Landind

In this workshop, I will describe the process by which most science topics can be integrated into a cross curriculum approach to learning. As SOLs demand greater and greater focus on reading and math, science and history budgets and times are being decreased, a cross curriculum approach allows time to be devoted to science while reinforcing other core subjects as well. It is a method which address all intelligences and learning styles and helps the material be integrated more thoroughly.

B-478 **Racing with Hydrogen** Hands-on
10:20-11:10 Technology Grades 3 - 5 General Science
Suite 478 Gail Warren, MathScience Innovation Center, Richmond msinnovation.info

Are you doing your fair share when it comes to "going green"? Do you know what alternative fuels are headed our way in the near future? Investigate and construct a hydrogen fuel cell car which can be used in your classroom. Practice building and experimenting with different concepts in the alternative fuels of the future debate. (Math SOL: 3.7, 3.14, 3.21, 4.2, 4.4, 4.11, 5.1-.3, 5.11, 5.18, 5.19; Science SOL: 3.11,5.4)

B-Chrysalis **Cool Tools for Light and Color** Demonstration
10:20-11:10 Investigate and Understand Grades 3 - College Physics/Physical Science
Chrysalis Tony Wayne, Arbor Scientific www.arborsci.com

Participants will see and use innovative, hands-on activities and demos related to light and color. Learn about how to teach color addition and subtraction, polarization, diffraction, spectrum, reflection, refraction, and more. Teaching tips and lesson ideas for all grade levels!

B-Fairfax **POGIL: An Overview** Demonstration
10:20-11:10 Investigate and Understand Grades 6 - 12 Chemistry
Fairfax Jill Barker, Millbrook High School, Frederick County

POGIL (Process Oriented Guided Inquiry Learning) provides chemistry teachers with the opportunity to guide their students using team-based directed inquiry to learn chemistry concepts. This session will enable teachers to simulate a POGIL activity and provide with tips and techniques to incorporate POGIL in their classroom.

B-Piedmont II **High School Science with Vernier LabQuest** Hands-on
10:20-11:10 Technology Grades 9 - College General Science
Piedmont II Verle Walters, Vernier Software & Technology www.vernier.com

In this hands-on workshop you will learn how easy it is for your students to collect and analyze data using Vernier LabQuest. You will be able to try experiments from our popular lab books, Chemistry with Vernier, Biology with Vernier, Physics with Vernier, and Earth Science with Vernier.

B-Potomac I **Cause & Effect - Do They Get It?** Hands-on
10:20-11:10 Investigate and Understand Pre K - College General Science
Potomac I Jim Disbrow, Emerging Energy Complicity Knots (EECK) www. eeck.us

Failure to get "cause and effect" means knowing science will remain outside their grasp. This session will demonstrate a way to mesmerize students with enough of the various transformations of energy so they grasp the concept. Students can be asked if they "Know Energy?" and "Where is the energy coming from?" Through a root cause analysis, they wind up with classroom investigations that lead to student investigations and, in turn, yield student understandings.

B-Potomac II **Strategies for Incorporating Geospatial Technologies** Demonstration
10:20-11:10 Investigate and Understand Grades 6 - College General Science
Potomac II Nick Koltun, Virginia Space Grant Consortium; Gregory Overkamp, Portsmouth Public Schools; Heather Smith, Portsmouth Public Schools http:/www.vsgc.odu.edu

Educators from the OVERspace Program sponsored by the Virginia Space Grant Consortium will discuss how to incorporate problem-based learning, differentiation, and assessment with geospatial technologies as an effective teaching tool. Implementing geospatial technology effectively is more than just adding software and hardware to a classroom. It also requires that educators overcome the intimidation of linking geography and technology with science and inquiry thinking.

B-Potomac III **VA Department of Education Update on the Science SOL Review** Demonstration
10:20-11:10 Grades K - 12 General Science
Potomac III Paula Klonowski, Virginia Department of Education, Barbara Young, Virginia Department of Education

The Science SOL are currently in the process of being reviewed. Come to this session to learn about recommended changes to the Science SOLs and other VDOE science initiatives.

B-Veritas **The Barbie Family Secret** Hands-on
10:20-11:10 Investigate and Understand Grades 6 - 12 Biology/Life Science
Veritas Cheryl Coronado, Woodrow Wilson High School, Portsmouth

Spruce up your Biology SOL or even your Life Science course this year with a simple way to infuse biotechnology and other simple lab skills in a problem based classroom assignment. The activities suggested in this session feature a forensics crime solving scenario idea that can be completed in two hours of class instruction. You may be inspired to expand the activities and do other projects throughout the year.

2009 PDI Concurrent Sessions • Friday AM, November 6 • SESSION C

C-122 **Exploring Environmental Issues Using Project Learning Tree** Hands-on
11:25-12:15 Investigate and Understand Grades 6 - 12 General Science
Parlor 122 Anne Mannarino, Virginia Beach School System; Sandra Jewell, Mecklenburg County Public Schools

Exploring Environmental Issues: Focus on Risk/Biotechnology module helps students explore the different aspects of environmental and human health risks that affect their everyday lives and introduces students to biotechnology and its applications. It incorporates science, social studies, math, geography, and language arts. The module is designed to be infused into existing curriculum and is correlated to the national science standards. You will receive the teaching module at this session.

C-136 **MWEE & World Water Monitoring Day** Hands-on
11:25-12:15 Inquiry in the Field Grades 3 - 8 Environmental Science
Parlor 136 Katie Register, Clean Virginia Waterways & VA Water Monitoring Council; Chris French, Alliance for the Chesapeake Bay & VA Water Monitoring Council

The annual World Water Monitoring Day (WWMD) is a perfect way for teachers to incorporate a Meaningful Watershed Education Experience into their curriculum. Members of the VA Water Monitoring Council will share the new Virginia-specific WWMD Guide during this hands-on session. Each attendee will use, and take home, a WWMD Test Kit ($15 value). Teachers will learn to use this kit to monitor the quality of local watersheds and enter the results into an international database.

C-222 **Keeping It Cool!** Hands-on
11:25-12:15 Technology Grades 3 - 5 Physics/Physical Science
Parlor 222 Laura Blackburn, MathScience Innovation Center, Richmond www.msinnovation.info

Perhaps you have a budding engineer in your classroom. Introduce your students to engineering principles that enhance the content of selected math and science Standards of Learning. Students will test their engineering intelligence and design an effective cooling device, test their designs using a temperature probe and analyze statistical data to affirm their engineering success. (Science SOL 4.1, 4.3a, 5.1e, f; Math SOL 4.20, 5.18)

C-236 **MarineTech - Density, Buoyancy, and Boats** Hands-on
11:25-12:15 Investigate and Understand Grades 3 - 12 Physics/Physical Science
Parlor 236 Daniel Dickerson, Patti Horne, http://www.lions.odu.edu/~averma/MarineTech/MarineTechIndex.htm
Rose Hotchkiss, Sue McKinney, and Dr. Alok Verma, Old Dominion University

This session will provide a description of the SCHEV-funded MarineTech Project including several of the teacher activities used to enhance understandings of density, buoyancy, mathematics, and engineering principles.

C-322 **Active Science in a Changing World: S'COOL and MY NASA DATA** Demonstration
11:25-12:15 Investigate and Understand Grades 3 - 12 Earth/Space Science
Parlor 322 Susan W. Moore, http://scool.larc.nasa.gov, http://www.mynasadata.larc.nasa.gov
NASA Langley Research Center/SSAI

Learn about two NASA education projects that can help you teach about the world while making connections across the curriculum. The CERES Students Cloud Observations On-line Project (S'COOL) involves students in ongoing NASA research by actively observing and reporting on specific aspects of the local environment. The MY NASA DATA project makes NASA satellite data about the Earth accessible for use in your classroom. The projects feature a variety of K-12 teacher-written lessons. Hand-outs!

C-415 **The Death of PowerPoint** Demonstration
11:25-12:15 Technology Grades 9 - 12 General Science
Suite 415 Linda Cauley, Shenandoah Valley Governor's School, Augusta County; John Almarode, University of Virginia

Ever joke about "death by PowerPoint?" Presentation software has become ubiquitous in our classrooms. Without doubt, creative use of software can greatly enrich a classroom environment, but may not lead to gains in student mastery. Medina's book, Brain Rules, would indicate that it may not unless used in very specific ways that present information visually rather than in text format. Strategies for more effective use of instructional technology will be modeled and preliminary research presented.

C-416 **Teaching the Holocaust and Genocide in the Biology Classroom** Demonstration
11:25-12:15 Grades 6 - 12 Biology/Life Science
Suite 416 Rena Berlin, Virginia Holocaust Museum www.va-holocaust.com

Teaching middle and high school students about the Holocaust and Genocide is not only for the history and literature teacher, especially in the Commonwealth of Virginia. It is essential that students understand that both science and technology can, and were, used as tools of war.

C-476 **Enhancing Science Instruction with Science Notebooks** Hands-on
11:25-12:15 Investigate and Understand Pre K - 5 General Science
Suite 476 Jodi Hepner and Stephanie Roche, Fairfax County Elementary Science Department

In this session, see how you can increase students' understanding of science concepts by using interactive strategies, such as foldables and reflection structures. You will create a science notebook sample. You will be able to use this with your students and add to it during the school year.

Don't miss out on the Door Prizes!

When you attend the last General Session with Mad Science on Saturday you will be given an opportunity to win one of the exciting items that are donated every year by our wonderful sponsors, partners and exhibitors. You can't win if you aren't present!

C-477 **It's All In the Bag!** Hands-on
11:25-12:15 Investigate and Understand Pre K - 5 General Science
Suite 477 Pamela Hanshaw and Patricia Sutton, Fannie W. Fitzgerald Elementary School, Prince William County
Teachers of K-5 science will try out the strategy of science in a bag. Students in K-5 will be engaged and learn new concepts through exploration with teacher selected materials. These simple, inexpensive materials can then go home with the students to encourage continued exploration and understanding the concept. Teachers will leave with a packet of experiments and lists for the bags that they will provide for their students to teach key concepts. These have proven to engage our students.

C-478 **Using Digital Photography in Elementary Science Investigation** Demonstration
11:25-12:15 Technology Pre K - 5 General Science
Suite 478 Alison Bauer and Courtney Gartz, Spring Hill Elementary School, Fairfax County Public Schools
Observation, communication and collection of data are core science process skills in the elementary classroom. Many tools exist to facilitate these processes with kindergartners while still challenging sixth graders. This presentation will share lessons which integrate the use of digital still and video photography as well as microphotography. All the tools are affordable and user friendly. Teachers will walk out of the presentation with easy to use lessons to implement immediately.

C-Chrysalis **Light Rays in Action: Reflection and Refraction** Hands-on
11:25-12:15 Investigate and Understand Grades 6 - College Physics/Physical Science
Chrysalis Lori Anderson, Arbor Scientific www.arborsci.com
Teach your students how images are formed by mirrors and lenses using guided inquiry. Let them see the light rays in action as they reflect and refract! In this workshop participants will have hands-on experience with ray tracing activities using an inexpensive, yet incredibly versatile LASER Ray Box and Optics Kit from Arbor Scientific. Participants will receive classroom ready, guided-inquiry style laboratory handouts for use in physics or physical science.

C-Fairfax **Holiday Chemistry** Hands-on
11:25-12:15 Investigate and Understand Grades 9 - 12 Chemistry
Fairfax Kelley Aitken and Donnia Carmical, Frederick County Public Schools
"If you are not willing to risk the unusual, you will have to settle for the ordinary". This quote in essence defines what Chemistry should be. Take the largest holidays and engage the students in a visual and hands-on trip into history, myths, consumerism and science, we as teachers have placed knowledge and enquiry into now eager hands. This session will provide activities to teach chemistry SOLs through holiday themed lab activities.

C-Piedmont II **K-8 Science with Vernier LabQuest** Hands-on
11:25-12:15 Technology Grades 3 - 8 General Science
Piedmont II Verle Walters, Vernier Software & Technology www.vernier.com
In this hands-on workshop you will learn how easy it is for your students to collect and analyze data such as temperature and motion using Vernier LabQuest. You will be able to try experiments from our popular Elementary Science with Vernier and Middle School Science with Vernier lab books.

C-Potomac I **Forms of Energy and Energy Transformations** Hands-on
11:25-12:15 Investigate and Understand Grades 3 - 12 General Science
Potomac I Hallie Mills, NEED Project www.need.org
Use NEED's Science of Energy kit to explore the forms of energy and how energy is transformed from one form to another. The session will focus on kinetic and potential energy, heat, light, motors, batteries and electromagnetism. The NEED Project is a non-profit organization dedicated to energy education. All NEED materials are teacher-tested and correlated to the Virginia Standards of Learning.

C-Potomac II **Integrating the InterWrite SchoolPad into the Science Class** Demonstration
11:25-12:15 Technology Grades 6 - 12 General Science
Potomac II Jill Barker, Millbrook High School, Frederick County
This session will include an overview and a demonstration of the InterWrite SchoolPad. This portable bluetooth device can be used as a mouse, a virtual overhead projector, and a recording device throughout a classroom. The presenter has been using this device for several years with science classes and will share benefits of and helpful tips regarding its use.

C-Potomac III **Professional Opportunities Through VAST - For Preservice Teachers** Demonstration
11:25-12:15 Pre K - College General Science
Potomac III Wendy M. Frazier, George Mason University; Donald W. Foss, Former VAST President www.VAST.org
Learn how VAST can help you with your individualized professional development plan, and how you can assist VAST with its mission. Opportunities await those who are committed to improving Science Education - both locally and statewide. 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.

C-Veritas **SIOP Review For Tests and Quizzes** Hands-on
11:25-12:15 Assessment Grades 6 - 12 Biology/Life Science
Veritas Allyson Midgley, Clover Hill High School, Chesterfield County; Margaret Stevens, VCU ACT-ESL
Learn how to involve reading, writing, listening and speaking into a review session for tests or quizzes. This is especially appropriate for English Language Learners. Join us as we walk you through this stress-free atmosphere as students are prepared for assessments and SOL tests.

DE-122 **Fostering a Community of University-based Teacher Educators** Hands-on
1:30-3:15 Grades 9 - College General Science
Parlor 122 Donna Sterling, George Mason University; Clair Berube, Hampton University; Daniel Dickerson, Old Dominion University; Shirley Sypolt, Christopher Newport University; Randy Bell, University of Virginia; Woody McKenzie, Lynchburg College; Jacqueline McDonnough, Virginia Commonwealth University; Erin Peters, George Mason University; David Slykhuis, James Madison University; George Meadows, University of Mary Washington; Jenny Sue Flannagan, Regent University; Peggy Schimmoeller, Randolph College; Peter Sheldon, Randolph College; Tricia Easterling, Radford University; Wendy Frazier, George Mason University
This session is an opportunity for college/university-based science teacher educators and other current/future teacher educators to encourage each other in developing best practices for preparing elementary, middle, and high school science teachers. Come share your syllabus and a strategy you use to prepare teachers that works!

DE-222 **Physics Science Make-and-Take Demonstrations** Hands-on
1:30-3:15 Investigate and Understand Grades 3 - 5 Physics/Physical Science
Parlor 222 Tony Wayne, Virginia Instructors of Physics; Greg Matthes, Robert E. Lee High School, Fairfax; Ron Revere, Washington and Lee High School, Arlington; Tim Couillard, James River High School, Chesterfield County vip.vast.org/vast2009
Elementary school teachers will be shown several physical science demonstrations. The presenters will cover the science behind these demonstrations. Participants will then build the simple demonstration equipment. They can then take what they build with them to either show their students the demonstration or have the students make demonstrations/lab equipment of their own.

D-136 **The People Connection: Hands-on Human Ecology** Hands-on
1:30-2:10 Grades 6 - 8 Environmental Science
Parlor 136 Melissa Holmes, Glasgow Middle School, Fairfax County www.populationeducation.org
Help students understand the connections between people's natural resource use and environmental quality with memorable, interdisciplinary games, simulations and problem-solving challenges. Engage in activities that address human population change (density, crowding, birth/death rates) and human changes to our environment, such as land use patterns and pollution. The presented activities will also help foster environmental awareness and stewardship among middle school students. Free CD-ROM!

D-236 **Introducing Inquiry Investigations™ - Inquiry Activities Focusing on Technology** Hands-on
1:30-2:10 Technology Grades 7 - 10 General Science
Parlor 236 Doug Welles, Frey Scientific & Neo/SCI www.freyscientific.com
Explore the new hands-on, active learning science series modules and kits geared for students in grades 7-10. See how technology and inquiry help students to understand essential science content in 10 science areas: Forensics, Physical Science, Cellular World, Biotechnology, Genetics, Life's Kingdoms, Environmental Issues & Solutions, Chemistry, Earth's Resources, and Human Biology. Participants will receive various software samplers.

D-322 **Earth Science in Your Backyard: Teaching with Local Fossils** Hands-on
1:30-2:10 Inquiry in the Field Grades 6 - College Earth/Space Science
Parlor 322 Chris Kaznosky, Central High School, Shenandoah County; Stephen Leslie, James Madison University Department of Geology
Speak of fossils to many students or adults and they usually think of dinosaurs. But for many geologists, fossils of much smaller organisms is where the real research occurs. In this session, attendees will learn how to use local fossils and rocks to teach about multiple geologic concepts, particularly those related to absolute and relative dating in both field and lab settings. Relavant resources, lab techniques, and how to create field guides for your location will be the focus.

D-415 **Right-half Brain Thinking in Science: Strategy, Case Studies** Demonstration
1:30-2:10 Investigate and Understand Grades 6 - 12 General Science
Suite 415 David Anderson, American Chemical Society/Lyotropic Therapeutics, Inc.
The prevalent notion that Science is rote data-taking, and predominantly a left-half brain activity, will be seen to be fictitious, and stifling to the prospective scientist. Evidence from many disciplines shows that the "expansive" or "divergent" thought uniquely offered by right-hemisphere is crucial to scientific thought, particularly when used in tandem with the left-hemisphere's ability to extract goal-directed ideas with "convergent" thought.

D-416 **Smithsonian Conservation Training with George Mason University** Demonstration
1:30-2:10 Grades 9 - 12 Biology/Life Science
Suite 416 Jennifer Buff, Smithsonian's National Zoo - Conservation and Research Center http://nationalzoo.si.edu/ConservationAndScience/MAB/GMU/default.cfm
The Smithsonian Institution and George Mason University have joined forces to form the Smithsonian-Mason Global Conservation Studies Program. This alliance offers immersion programs for undergraduate, graduate and professional development in conservation studies at the Conservation & Research Center in Front Royal, VA. A current objective is to assist high school teachers and counselors identify and encourage promising students to pursue college-level conservation science programs, such as this.

D-417 **Inexpensive Ways To Investigate Bird Survival** Hands-on
1:30-2:10 Investigate and Understand Pre K - 8 Biology/Life Science
Suite 417 Mythianne Shelton, Virginia Tech
A hands-on, interactive session designed for elementary and middle school teachers. Participants will investigate a variety of factors that influence the survival of young birds. We will determine which substance is the best for cleaning bird feathers when exposed to oil. Participants will use M and Ms to determine why so many bird eggs do not survive in the wild and investigate which bird beak is best for eating a variety of different food sources. Handouts will be provided to participants.

D-476 **Growing Great Minds: Hands-On Activities for the K-5 Student** Hands-on
1:30-2:10 Investigate and Understand Pre K - 5 General Science
Suite 476 Lynn Stadelmeier, Agriculture in the Classroom www.agintheclass.org
Join AITC for a highly interactive session full of SOL-aligned hands-on lessons and resources for the K-5 classroom. Create unique make-and-takes, such as life cycle foldables and a Root Viewer. Activities will demonstrate and model germination, pollination, life cycle, measurement, and data collection. Workshop participants will also receive an array of classroom resources.

D-477 **Earth Day Celebrations in the Elementary School** Hands-on
1:30-2:10 Inquiry in the Field Pre K - 5 General Science
Suite 477 Susan Jones and Becky Ferguson, Portlock Primary School, Chesapeake
This workshop will address and explore a variety of ways that Earth Day can be celebrated with children in a K-5 setting. The emphasis will be on environmental activites that can be conducted during the school day. Hand-outs will be available and attendees will have the oppurtunity to try out some of the activities included in the packet. There will also be the opportunity to address the integration of a meaningful watershed activity into Earth Day.

D-478 **Digital Immigrants Assimilation in the Science Classroom** Demonstration
1:30-2:10 Technology Pre K - College General Science
Suite 478 Liz Baynard, Thoreau Middle School and George Mason University
I will explore the challenges faced by Digital Immigrants teaching Digital Natives in a science classroom. Science education relies heavily on not only using technology as real scientists do, but also on using technology in an instructionally significant manner. This session will explore ways to assimilate in the science classroom based on current research. Blogging, cell phones, games, podcasting, RSS feeds, Wikis, and mash-ups will be discussed as well as the differences in learning styles.

D-Chrysalis **Investigating Energy Conversion Through Chemical Batteries** Hands-on
1:30-2:10 Investigate and Understand Grades 6 - 8 Physics/Physical Science
Chrysalis Amy Kezman, LAB-AIDS, INC.; Peggy Bailey, SEPUP Trainer - LAB-AIDS, INC.
In this activity students investigate energy conversion through the study of simple electrochemical cells. They design an investigation to determine the best combination of metals to use in a wet cell. Students explore different combinations of metals and observe the reaction rates. Metals such as aluminum and zinc react rapidly with copper chloride solution, while iron reacts more slowly. Students apply this knowledge to choosing metals for constructing a battery.

D-Fairfax **Exploring the Periodic Table - Examine the Earth** Hands-on
1:30-2:10 Investigate and Understand Grades 6 - 8 Chemistry
Fairfax Gail Clark, Virginia Agriculture in the Classroom
Middle school science teachers will discover ways to add real world connections to their earth science, biology and physical science units using examples from agriculture. Activities using soil chemistry and pH of foods will be demonstrated as well as questions and extensions which add higher level thinking. Chemistry problems using fertilizer and animal feeds will also be shared. A complete teacher's guide with eight lessons correlated to the periodic table will be provided to participants.

D-Mosby **Field Trips: Real or Virtual Engagement For Your Classes** Demonstration
1:30-2:10 Inquiry in the Field Grades 6 - 12 Earth/Space Science
Mosby Michele Baird, Deborah Marshall, and Henry Coppola, Granby High School, Norfolk
Get your kids out of the classroom! We will share a series of field trips we have incorporated in our Earth Science courses. These trips have engaged ALL of our students in science! And, if you can't take the kids to the field, we will show you ways to bring the field to the kids.

D-Piedmont I **The Best Books for Your Kit! Literacy and Inquiry Science** Hands-on
1:30-2:10 Investigate and Understand Grades K - 5 General Science
Piedmont I Carolina Biological Supply Company www.carolinacurriculum.com
Ready to combine science and reading? Find out how to combine science and literacy through nonfiction books and readers. Sample books that have been tied to units within The STC PROGRAM™ , and explore how you can help close the nonfiction gap in your classroom.

D-Piedmont II **Tough Topics in Biology: Cell Respiration** Hands-on
1:30-2:10 Technology Grades 6 - College Biology/Life Science
Piedmont II Virginia Crisp, PASCO Scientific; Bruce Davidson, Newport News City Schools
Explore PASCO's state-of-the-art science teaching solutions to one of the toughest aspects of biological investigations, cell respiration. In this hands-on workshop, you will participate in standards-based probeware lab activities from PASCO's new biology curriculum. See how the SPARK Science Learning System will enhance your teaching practice and improve student understanding of your core topics.

D-Potomac I **Our Top Ten Energy Sources** Hands-on
1:30-2:10 Grades 3 - 12 General Science
Potomac I Hallie Mills, NEED Project www.need.org
Energy is a hot topic! Do you wonder how your electricity is produced or how solar panels work? Learn about the top ten energy sources we use today, and take home curriculum you can use in your classroom right away! The NEED Project is a non-profit organization dedicated to energy education. All NEED materials are teacher-tested and correlated to the Virginia Standards of Learning.

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D-Potomac II **Covering the SOLs While Teaching with PBL** Hands-on
1:30-2:10 Investigate and Understand Grades 6 - College General Science
Potomac II Scott Kubista-Hovis, Hayfield Secondary School, Fairfax County

Kids love PBL, but it can take a lot longer to cover just a few state standards. What if I were to tell you that there is a variation of PBL that not only allows you to cover all SOL content, but it also energizes the kids and makes them want to learn. The technique is called Team Based Learning (http://teambasedlearning.apsc.ubc.ca/). It has been proven to dramatically improve student performance, while increasing student's overall satisfaction with the class. Tools and lesson plans provided.

D-Potomac III **Youngest Scientists: Hands-on Activities Support Exploration** Hands-on
1:30-2:10 Investigate and Understand Pre K - 2 General Science
Potomac III Peggy Ashbrook, Preschool Science Teacher, http://blogs.nsta.org/EarlyYearsBlog/default.aspx
The Early Years Columnist; Anne Richardson, Cora Kelly School for Math, Science and Tech, Alexandria

Participants will work through 3 hands-on activities for grades preK-2 and take home the lesson plans with a list of resources. The investigative activities focus on planting spring flowering bulbs, testing for buoyancy (nature of materials through sink or float), and defining what is alive and what is not. Activities support the SOLS and the NSES as young scientists explore, predict, document their work with drawing, dictation and writing, and use math skills to record their observations.

D-Tarara **Active Learning Extravaganza with Delta Education, K-2** Hands-on
1:30-2:10 Investigate and Understand Grades K - 2 General Science
Tarara Tom Nassif and Kip Bisignano, Delta Education

Engage in hands-on investigations from FOSS: Full Option Science System that addresses the Virginia Standards of Learning. Participants receive materials and sample readers to set up a classroom center to explore science concepts.

D-Veritas **Learning from Nature** Hands-on
1:30-2:10 Investigate and Understand Grades 3 - 5 Biology/Life Science
Veritas Crystal Clark, MathScience Innovation Center, Richmond www.msinnovation.info

Humans often look to nature for inspiration. Learn about the unique properties of plants and animals and how scientists and engineers have mimicked nature to produce products with the same properties. Participate in hands-on activities where you will learn to incorporate plant adaptations, engineering, and scientific inquiry in your classroom. Conduct scientific investigations which will lead to the discovery of self-cleaning and water resistance products developed based on nanoscience.

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EF-322 **Bring the Real World of Ocean Science to Your Classroom** Hands-on
2:25-4:20 Investigate and Understand Grades 6 - 12 Earth/Space Science
Parlor 322 Sharon Katz-Cooper, Leslie Peart, and Jennifer Collins, www.joidesresolution.org
Deep Earth Academy Consortium - Ocean Leadership

Learn how your students can work with real data and scientists from the JOIDES Resolution (JR), one of the most important and largest science research vessels now at sea. The JR is run by the Integrated Ocean Drilling Program and the core samples and data collected hold significant clues to Earth's history, climatic changes, geologic events, and more. We will show you how you can use this dynamic research and JR website in your classroom and will share teacher opportunities on board the JR.

E-136 **Ecolution:Changing Ecology Studies to Include Technology** Demonstration
2:25-3:15 Technology Grades 6 - 8 Environmental Science
Parlor 136 Joyce Zupko, Sterling Middle School, Loudoun County http://www.coastlines.ws

Engaging and empowering students by using GIS/GPS technology to explore the environment. Overview of implementing new technology in the classroom and gaining confidence and proficiency in the process. The Coastlines program introduces fundamental concepts about information technologies (IT) by involving teachers and students in using geographic information systems (GIS) and global positioning systems (GPS) to conduct scientific studies of coastal ecosystems.

E-236 **The Past, Present, and Future of Fort Monroe** Demonstration
2:25-3:15 Inquiry in the Field Pre K - College General Science
Parlor 236 Denny Casey, Virginia Museum of Natural History

In 2011, the U.S. Army will be turning over Fort Monroe and Old Point Comfort to the Commonwealth of Virginia. This session will give an overview of the historical significance of Fort Monroe and describe what's being done by state agencies, the Army, and concerned citizens to plan for the future of Fort Monroe. Current plans include a presence of a museum campus, public programs, and natural and recreational opportunities.

E-415 **A New Lens on Student Research Projects** Hands-on
2:25-3:15 Investigate and Understand Grades 9 - 12 Biology/Life Science
Suite 415 Steve Oden, MathScience Innovation Center, Richmond www.fractalkeys.info

Empower your students with a competitive edge in science fairs! Explore ideas for using fractal geometry to infuse creativity and innovation into student research projects. See how computer technology and imaging techniques can be used to quantify irregular structures not easily measured by conventional methods. An introduction to our new "Fractal Keys" website will preview lessons and tutorials for exploring this engaging topic.

E-416 **Classroom Exchange: Practical Ideas for SOL Preparation** Hands-on
2:25-3:15 Investigate and Understand Grades 6 - 8 General Science
Suite 416 Liza Coffman, Jamie Nichols, and Natalie Rhodes, Peter Muhlenberg Middle School, Shenandoah County

Teaching middle school science in Virginia presents the unique challenge of preparing students for the Grade 8 combined science SOL test in the spring. In this session, classroom teachers discuss their vertically-developed plan to involve more than just 8th grade through a classroom exchange. Presenting teachers will show what is working in the 7th and 8th grade classrooms of one middle school and provide copies of pacing guides and lesson materials.

E-417 **Don't Bug Me!** Hands-on
2:25-3:15 Investigate and Understand pre K - Grades 2 Biology/Life Science
Suite 417 Isabel Valentini, Star of the Sea Catholic School, Catholic Diocese of Richmond

Introduce young children to the world of bugs and insects through the use of literature (fiction and non-fiction), videos, and hands on activities. Learn how this Science topic can be integrated into other curriculum areas and adapted to different age levels.

E-476 **Engage,Explore,Explain - Using Literature to Spark Science** Hands-on
2:25-3:15 Investigate and Understand Pre K - 5 General Science
Suite 476 Leslie Lausten, Hartwood Elementary School, Stafford County; Rita Lysher, Brooke Point High School, Stafford County

This session will explore how to use children's literature as the spark for guided inquiry in your science classroom. The session incorportates the five Es of inquiry using the BSCS model. The model is a learning cycle of engaging, exploring, explaining, elaborating and evaluating. Both fiction and non fiction picture books will be use in the engaging, exploring or expanding phases in the cycle. Hands on actvities from Picture Perfect Science will be demonstrated along with our variations.

E-477 **MIXED BACK OF TRICKS! "For the Love of Science"** Hands-on
2:25-3:15 Investigate and Understand Grades 6 - 8 General Science
Suite 477 Madalin Jackson-Bickel, Stafford Middle School, Stafford County

Designed for middle school and upper elementary science teachers, this workshop will consist of dozens of ideas, hands-on-acitivities, and lesson plans to turn kids on to science. Activities will include, but not be limited to, kitchen chemistry, science foldables, exploratory activities (based on the learning cycle and constructionism), and simple investigations. The presenter will include an emphasis on Blooms higher cognitive thinking skills and differentiated instruction.

E-478 **Science Swiss Style** Demonstration
2:25-3:15 Inquiry in the Field Grades 3 - 12 General Science
Suite 478 Conni Rasmussen, Plaza Middle School, Virginia Beach

Have you ever wondered what it would be like to teach science in an Swiss Boarding School? Do teachers really get to ski the Alps, hike glaciers,analyze soil samples from Tuscan vineyards or sail off Sardinia? They really do and without bus duty! Conni Rasmussen, an Oxford University graduate in international science education and experienced international science teacher, will guide you to a new career path in science education! Learn how to see the world and teach science along the way!

E-Chrysalis **Fast and Furious - Force and Motion for Middle School** Hands-on
2:25-3:15 Investigate and Understand Grades 6 - 8 Physics/Physical Science
Chrysalis Amy Kezman, LAB-AIDS, INC.; Peggy Bailey, SEPUP Trainer - LAB-AIDS, INC.

Students investigate concepts related to force and motion in the context of vehicle safety issues. The unit begins with investigations of speed, motion graphs, and the impact of mass and speed on vehicle accidents. Students investigate force, acceleration, mass, and friction and are introduced to Newton's laws of motion. They apply these concepts to vehicle braking and stopping distances and investigate the stability of vehicles with different centers of mass.

E-Fairfax **Labs for the Chemistry Teacher in a Time Crunch** Demonstration
2:25-3:15 Investigate and Understand Grades 6 - College Chemistry
Fairfax Suzanne Smith and Kasey Fisher, Harrisonburg High School, Harrisonburg

If you find yourself short on class time, there is no need to sacrifice labs. All of these labs can be completed in around 30 minutes. Students can experience hands-on content without sacrificing a lot of class time. Topics range from types of change, reaction types, rates of reactions, nuclear decay, the mole, stoichiometry, nomenclature, pH, and solutions. Labs require minimal materials and teacher preparation; handouts for each lab will be provided.

E-Mosby **Federation of Galaxy Explorers - Starting a Mission Team** Demonstration
2:25-3:15 Inquiry in the Field Grades 3 - 8 Earth/Space Science
Mosby Susan Bardenhagen, Union Mill Elementary School, Fairfax County www.foge.org

Presenter is a classroom teacher who has been involved with F.O.G.E. since its inception six years ago. Working with 3 mission teams of students in grades 3-4, 5, and 6-8 is exhilirating when you witness the curiosity and enthusiasm of our future scientists, engineers, astronauts, and technologists. The organization's advisory board includes 3 former astronauts, its website provides lesson plans, and the organization has major corporate sponsorship in the engineering and technology fields.

2009 PDI Concurrent Sessions • Friday PM, November 6 • SESSION E - F

E-Piedmont I **Project Based Inquiry Science** Hands-on
2:25-3:15 Investigate and Understand Grades 6 - 8 General Science
Piedmont I Thomas Custer, It's About Time Publishing
Come see and do the new Project Based Inquiry Science program. A unique feature is the launcher unit for each science strand that reinforces process skills to start the year. Thirteen module books cover Standards topics in life, earth/space and physical science in either an integrated or layer cake approach. A scenario- and project-based approach student scientists love.

E-Piedmont II **Tough Topics in Middle School Science: Physical Science** Hands-on
2:25-3:15 Technology Grades 6 - College Physics/Physical Science
Piedmont II Virginia Crisp, PASCO Scientific; Bruce Davidson, Newport News Public Schools www.pasco.com
Explore PASCO's state-of-the-art science solutions to tough topics in middle school physical science. In this hands-on workshop, you will participate in standards-based probeware lab activities from PASCO's new middle school curriculum. See how the SPARK Science Learning System will change your teaching practice and improve student understanding of your core topics.

E-Potomac I **Enhancing Experiments with Digital Video** Hands-on
2:25-3:15 Investigate and Understand Grades 6 - 12 General Science
Potomac I David Slykhuis, James Madison University http://sites.google.com/site/vast09/
This session will focus on how to incorporate digital video into experiments. This can done with LoggerPro and simple digital video cameras such as flip cams. The digital video can either be synchronized with an experiment or analyzed on its own. We will show examples in Biology, Chemistry, Earth Science, and Physics. Digital video cameras and computers will be available for a hands-on experience!

E-Potomac II **Field Based Inquiry Labs** Demonstration
2:25-3:15 Inquiry in the Field Grades 6 - 12 General Science
Potomac II Kelley Aitken, Frederick County Public Schools; Candace Lutzow-Felling, Blandy Experimental Farm
Exposing students to the world around them often ignites a series of questions. Take these questions and transform them into learning experiences. Focus your students' natural curiosity while teaching the science SOL content in an engaging way. This session will provide tips, guidelines, and sample activities that utlize local resources to create hands on inquiry based science experiences.

E-Potomac III **Teaching Scientific Investigation Through Google Apps** Hands-on
2:25-3:15 Technology Grades 6 - 12 General Science
Potomac III Jeanette Raileanu and Shannon Jackowicz, Louisa County High School, Louisa
This presentation will demonstrate the use of Google Applications to generate student interest and understanding of scientific investigation. Information on the use of gmail and video for online collaboration, Google Documents for recording data, Google Sites for creating student webpage portfolios of their scientific investigations, and Google Calendar will be discussed.

E-Tarara **Active Learning Extravaganza with Delta Education, 3-5** Hands-on
2:25-3:15 Investigate and Understand Grades 3 - 5 General Science
Tarara Tom Nassif and Kip Bisignano, Delta Education
Engage in hands-on investigations from FOSS: Full Option Science System that addresses the Virginia Standards of Learning. Participants receive materials and sample readers to set up a classroom center to explore science concepts.

E-Veritas **I Believe I Can Fly: Butterflies in the Curriculum!** Hands-on
2:25-3:15 Investigate and Understand Pre K - 5 Biology/Life Science
Veritas Pamela Hanshaw and Patricia Sutton, Fannie W. Fitzgerald Elementary School, Prince William County
Teachers of students K-5 will learn strategies and activities to teach about real life through the study of butterflies. From the egg, to caterpillars, to the emergence of the butterfly, students will interact with life and become immersed in each stage. Teachers will leave with supporting activities, ideas for labs, information on raising/purchasing caterpillars, and technology appplications supporting the VA SOLs.

2009 PDI Concurrent Sessions • Friday PM, November 6 • SESSION F

F-136 **Wind Driven Ocean Circulations** Hands-on
3:30-4:20 Investigate and Understand Grades 9 - 12 Earth/Space Science
Parlor 136 Suzanne McIninch, New Kent High School, New Kent County
Using this activity, students learn how horizontal movement of the ocean surface waters mimic planetary (atmospheric) circulation. Through a variety of inexpensive and dramatic classroom demonstrations and activities, students will understand how wind drives the currents in the ocean and mediates climate around the world. In addition, we will look at the 2009 El Nino and its effect on global climate change. Attendees will be given lesson plans, how to demos, and hands on activities relating to wind driven ocean circulation.

F-222 **Light and Optics Activities for Teachers** Hands-on
3:30-4:20 Investigate and Understand Pre K - College Physics/Physical Science
Parlor 222 Richard Lindgren and Stephen Thornton, University of Virginia Department of Physics
Several hands-on activities in light and optics covering selected topics in Virginia's SOL will be presented in table-top fashion. The presentation will focus on activities that can be primarily constructed from relatively inexpensive and easy to obtain supplies and materials. Activities for teachers at elementary, middle, and high school grade levels will be presented. A distance-learning, web-based course for teachers is being planned.

F-236 **Updating Science Fairs** Demonstration
3:30-4:20 Grades 6 - 8 General Science
Parlor 236 Kelly Anhony, E. H. Marsteller Middle School, Prince William County

The goal of this presentation is to have participants leave with the resources needed to create and implement a modern science fair within their own schools. We will began with a discussion of traditional science fairs. I have found that most traditional science fairs teach children to use one scientific method, despite the fact that professional scientists use many different methods. Additionally, traditional science fairs often have students completing similar projects year after year.

F-415 **Singing Songs of Life Science** Demonstration
3:30-4:20 Investigate and Understand Grades 6 - 8 Biology/Life Science
Suite 415 Derek Yoder, Luray Middle School, Page County

I have enjoyed singing with my 7th grade Life Science classes over the last 5 years and have written quite a number of songs on the topics of Cells, Metric Measurement, Natural Selection, Plants, and just general science. I want to share my work with teachers who would like to try it in their own classrooms whether they can sing or not. Come to this session prepared to sing along and take some songs home with you in your head, on paper, and maybe even on disc or in MP3 format.

F-416 **Recycle Yourself: Organ/Tissue Transplantation Resources** Demonstration
3:30-4:20 Investigate and Understand Grades 6 - College Biology/Life Science
Suite 416 Penny Martinez, Harrisonburg High School, Harrisonburg www.save7lives.org

Learn more about the organ and tissue transplant process, and bring home lesson plans, resources, fun activities, and some giveaway items. Lifenet is the organization who provides educators with valuable information, and will set up guest speakers for your classes as well. Guaranteed you will walk away with a different perspective.

F-417 **Help Your Students Grow With a Learning Garden** Demonstration
3:30-4:20 Investigate and Understand Pre K - 5 Biology/Life Science
Suite 417 Todd Murphy, Oak View Elementary School, Fairfax County

Many schools are planting seeds of knowledge and discovery with Learning Gardens - research shows that it works! Even Michelle Obama is using the White House garden to teach local school children. Walk away with practical ideas on how you can create a simple-to-build, low-maintenance garden for your school. Learn how gardening can support your lessons across the curriculum while engaging your students and promoting a "greener" world.

F-477 **Reading, Writing, and Science?** Hands-on
3:30-4:20 Investigate and Understand Grades 5 - 8 General Science
Suite 477 Tara Fraizer, Bonnie Brae Elementary School, Fairfax County; Stacy Vickers, Cherry Run Elementary School, Fairfax County

"But I don't have time to cover everything!" A common excuse heard in all schools. In this session, you will hear strategies that effectively integrate science with language arts without losing the hands-on part. We'll talk about how to use your science curriculum to develop students' understanding of reading and writing non-fiction. Make a little time to hear how two upper grade teachers have blended their hands-on content with reading and writing in multiple learning settings.

F-478 **Energize Your Classroom with JASON Online** Demonstration
3:30-4:20 Technology Grades 6 - 8 Physical Science
Suite 478 Michael Apfeldorf and Marjee Chmiel, National Geographic - The JASON Project

The JASON Project's new energy curriculum, Operation: Infinite Potential, invites students to investigate and explore the challenges and emerging solutions for an energy-hungry planet. The presenter and a Fairfax County teacher will demonstrate how to use the free online resources which include videos, digital labs and animations to connect students with scientists and researchers and apply their knowledge to the same scenarios the scientists face every day.

F-Chrysalis **Understanding Topo Maps and Modeling Erosion and Deposition** Hands-on
3:30-4:20 Investigate and Understand Grades 6 - 8 Earth/Space Science
Chrysalis Amy Kezman, LAB-AIDS, INC.; Peggy Bailey, SEPUP Trainer - LAB-AIDS, INC.

Join us for a hands-on investigation that will provide students with a basic understanding of topographic maps and the dynamics of stream erosion and deposition. You will conduct two hands-on investigations using the LAB-AIDS Topographic Model and Mini Stream Table.

F-Fairfax **The AP Chemistry Reading Process: Overview and Observations** Demonstration
3:30-4:20 Assessment Grades 9 - College Chemistry
Fairfax Jill Barker, Millbrook High School, Frederick County

This session will provide an overview of the AP reading process for the 2009 AP Chemistry exam. It will discuss how to apply to become a reader, the structure of the reading week, and feedback on how specific questions were graded. Observations will also be shared regarding AP exam test-taking strategies.

F-Mosby **Trash to Treasures: Reusing Materials in the Classroom** Hands-on

3:30-4:20 Investigate and Understand Grades 3 - 8 Math in Science

Mosby Susan Bardenhagen, Union Mill Elementary School, Fairfax County

Presenter will model lessons using reused materials for instructing Math concepts. Applying ecological strategies to Science lessons reinforces positive environmental education. Participants will recieve packets of "treasured" materials to use in 3rd-8th grade classrooms in Math, Science, and Social Studies. Reusing materials that are often recyclable provides a good example to students.

F-Piedmont I **Active Physics and Active Chemistry- Scenario, Project Based** Hands-on

3:30-4:20 Investigate and Understand Grades 9 - 12 Physics/Physical Science

Piedmont I Thomas Custer, It's About Time Publishing

Introductory physics and chemistry courses which are hands-on, inquiry based and which are scenario driven to keep students involved and excited. An activity before concept instructional approach that addresses all learning styles and has positive NSF funded assessment results. Come and complete some student activites for your classroom.

F-Piedmont II **Home-made Hydrogen** Hands-on

3:30-5:00 Investigate and Understand Grades 6 - College General Science

Piedmont II David Ruble and James Beckley, Virginia Office of Environmental Education, Virginia Department of Environmental Quality

With a little bit of knowledge and ingenuity Poul la Cour harnessed wind into hydrogen for lighting and welding in 1891. Capturing and using hydrogen is not a new concept. This 90-minute session will teach you how to make a small DC generator and capture hydrogen out of easily attainable goods from around the house and the local hardware store.

F-Potomac I **Using Technology to Enhance 3-12 Science Instruction** Demonstration

3:30-4:20 Technology Grades 3 - College General Science

Potomac I Tracy Mitchell, ExploreLearning Gizmos www.explorelearning.com

ExploreLearning offers a catalog of interactive simulations in science and math for teachers and students in grades 3-12 called Gizmos. Gizmos are designed as supplemental curriculum materials that support state standards and research-proven strategies. Participants will explore concepts ranging from life and physical science to biology, chemistry and physics. Gizmos provide students with opportunities for guided exploration, helping them build a solid understanding of scientific concepts.

F-Potomac II **Marine Kits - Hands-on Activities to Engage Students** Demonstration

3:30-4:20 Investigate and Understand Grades 6 - 12 General Science

Potomac II Alok Verma, Old Dominion University www.themarinetech.org

Engaging students in math and science classes has been a perennial challenge for teachers. Hands-on activities requiring exploration and experimentation about science concepts have a proven record for transfer and retention of knowledge. To maintain student's interest in science and math, it is important that students establish a link between the theoretical knowledge and its application to solve real life problems early in their learning experience.

F-Potomac III **Chemistry and the Atom: Fun With Atom Building Games!** Hands-on

3:30-4:20 Investigate and Understand Grades 6 - College Chemistry

Potomac III Kat Woodring and John Myers, CPO Science www.cpo.com

The discoveries of the structure of the atom and the periodic table are great detective stories. However, 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 middle and high school students with different learning styles fun opportunities to explore and grasp atomic structure and the periodic table. Equipment raffle in each session.

F-Tarara **Virginia's White Tail Deer** Hands-on

3:30-4:20 Inquiry in the Field Grades 6 - 12 Environmental Science

Tarara Suzie Gilley and Nelson Lafon, Virginia Dept of Game and Inland Fisheries www.dgif.virginia.gov

This session will include information on the historical decline and recovery of deer populations, deer habitat, deer population dynamics, biological and cultural carrying capacity, deer-human interactions and deer-related recreation. Management and classroom tips on studying this unique keystone species will be discussed.

F-Veritas **Modeling Nature's Forest Population** Hands-on

3:30-4:20 Investigate and Understand Grades 6 - 8 Biology/Life Science

Veritas Rachel Martin, MathScience Innovation Center, Richmond http://www.fractalkeys.info

Science and math come together in this lesson as students learn about forest ecology and fire adaptations. Using hands-on materials, build a forest, examine its fractal characteristics and then burn it down. Whose trees survive? Continue the experience using a virtual tool from our website, Fractal Keys.

GH-417 **Help Them Remember More - Never Re-Teach Again!** Hands-on
9:30-11:25 Investigate and Understand Pre K - 12 General Science
Suite 417 John Almarode, University of Virginia www.thebrainway.com

Are you interested in students remembering more from your science class? Are you eliminate re-teaching content? If so, this workshop is for you. This eye-opening and exciting experience looks at the latest research on how the brain remembers and why it forgets. Participants will experience an environment that capitalizes on the brain's amazing memory systems. Teachers will walk away with instant strategies, ready for use, that will allow their students to remember more and FORGET LESS!

GH-Piedmont I **AUTOPSY: Forensic Dissection with Perfect Solution® Pigs** Hands-on
9:30-11:25 Investigate and Understand Grades 9 - 12 Biology/Life Science
Piedmont I Carolina Biological Supply Company www.carolina.com

Are you ready for a forensic dissection activity that is on the cutting edge? Engage students and revitalize your instruction of mammalian structure and function with a "real" classroom autopsy! Participants, working in pairs, dissect a pig by modeling the autopsy protocols of a forensic pathologist.

GH-Potomac I **Growing Up WILD** Hands-on
9:30-11:25 Investigate and Understand Pre K - 2 Environmental Science
Potomac I Suzie Gilley, Virginia Department of Game and Inland Fisheries www.projectwild.org

Growing Up WILD is the newest guide in the Proect WILD family. Designed for educators who work with 3-7 year olds Growing Up WILD will feature new activities designed to stimulate young children in new and exciting ways while connecting them to nature and many of its wonders. This 2 hour workshop is a hands-on session that will include not only content but fun methods to reach this young audience. Participants will receive the Growing Up WILD activity guide.

G-222 **Student Engagement is Just a Click Away** Demonstration
9:30-10:20 Assessment Grades 6 - 12 General Science
Parlor 222 Jennifer Sokol, Falls Church High School, Fairfax County

Use technology to engage your students in formative assessment. The Turning Point clicker system allows students to anonymously answer questions in any format (like Blackboard) allowing the teacher to get instantaneous class mastery data and allows for on-the-spot remediation. This tool can be used for review, or at the beginning of a unit to assess prior knowledge and adjust your lesson plans for that unit. With clicker assignments differentiation can improved based on individual results.

G-236 **High School Physics in the People's Republic of China** Demonstration
9:30-10:20 Grades 9 - 12 Physics/Physical Science
Parlor 236 Myron Hanke, Loudon County Public Schools

This is a documentary of a People to People delegation from the American Association of Physics Teachers that visited schools in Beijing, Nanjing, Shanghai and HongKong. I spent two weeks with 35 physics teachers from across the US, and I was allowed to teach a physics class one afternoon at the Nanyang HS in Shanghai.

G-322 **The Nature of Science: More Than Experimental Design** Demonstration
9:30-10:20 Investigate and Understand Grades 3 - College General Science
Parlor 322 Linda Peterson, Middle School Science Instructional Specialist, Fairfax County

If 'experimental design' is the only thing that comes to mind when you hear the phrase 'the nature of science' then this session is for you! The Nature of Science (NOS) consists of several main ideas and is at the heart of the scientific enterprise. Participants will actively engage in exploring the nature of science as well as investigating the relationship between scientific theories and laws. Materials to use with students will be provided.

G-415 **GIS Activities for Earth and Environmental Science Classes** Demonstration
9:30-10:20 Technology Grades 6 - College Earth/Space Science
Suite 415 Bob Kolvoord and Kathryn Keranen, James Madison University

Want to map a difference in your classroom? Geographic Information Systems (GIS) software connects students with real world data and lets you help your students build spatial thinking skills. In this session, we'll share and demonstrate a variety of new GIS-based activities for earth and environmental science. Come and see how you can integrate spatial thinking into your classes and connect your students with key content and 21st Century skills.

G-416 **Analyzing and Creating Higher Level Assessments** Demonstration

9:30-10:20 Assessment Grades 3 - 8 General Science

Suite 416 Kari Garner, Stenwood Elementary School, Fairfax County; Diana Lindsay and Daniel Lindsay, Silverbrook Elementary School, Fairfax County

We will analyze released SOL science tests and categorize them by Bloom's Taxonomy thinking levels. Participants will learn how to write their own multiple choice assessment items to best prepare students for the SOL.

G-476 **Support Students in Science Fair without a Crushing Workload** Demonstration

9:30-10:20 Investigate and Understand Grades 9 - 12 General Science

Suite 476 Thomas Pratuch, McLean High School, Fairfax County

A discussion on student science fair projects with what works, doesn't work, and isn't worthwhile. This applies to things done by teachers as well as students. Topics such as what makes a board and presentations successful, how to integrate the project into your curriculum even when it is in a different subject area, etc. will be addressed.

G-477 **Budget Friendly Straw Rockets and Frequency Activities** Hands-on

9:30-10:20 Investigate and Understand Grades 6 - 8 Physics/Physical Science

Suite 477 Janet Lundin, Lancaster Middle School, Lancaster County

Rocketry is a great activity to demonstrate Newton's Laws of Motion and by using inexpensive, readily available materials your students can design rockets and launch them. The students then will use their experience with the rockets to explain each of Newton's Laws of Motion. Frequency and pitch will be demonstrated using drinking straws as instruments. This activity is a favorite with the students, they are allowed to be noisy in class.

G-478 **Reaching the Digital Age Learner in the Science Classroom** Demonstration

9:30-10:20 Technology Pre K - 8 General Science

Suite 478 LaTonya Waller, Lucille Brown Middle School, Richmond

Today's science educators face many challenges, especially when it comes to integrating technology into quality instruction. Students, these digital age learners, are far beyond the paper & pencil methods used readily in classrooms. Challenges will be addressed as well as practical solutions that will stimulate every teacher to "get digital." If you are looking for answers and ideas to help improve the use of technology in your classroom, this workshop is a must. Participants will receive a CD!

G-Chrysalis **A Natural Approach to Chemistry** Hands-on

9:30-10:20 Investigate and Understand Grades 9 - 12 Chemistry

Chrysalis Amy Kezman and Debbie Carlisle, LAB-AIDS, INC.

Join us for a special preview and hands-on examination of selected laboratory activities from Dr. Tom Hsu's new high-school course, A Natural Approach to Chemistry. This course takes a fresh look at how chemistry is used today, in and out of the laboratory. Experiments have been developed to allow the program to do real, quantitative chemistry, using only non-toxic chemicals that are easy to dispose of.Selected lab activities will feature an innnovative new probe-ware system, The LAB-MASTER.

G-Fairfax **Size Matters - Nanoparticles and Properties** Hands-on

9:30-10:20 Investigate and Understand Grades 6 - 12 Chemistry

Fairfax Pamela Gentry, Atlee High School, Hanover County

Science teachers often explain that color is a physical property and is not size dependent. However, at the interface between the macro and nanoscale, properties change. Teachers will see that the color of gold is size dependent as the ions form larger aggregates. Activities and resources for incorporating nanotechnology into classrooms will be discussed. The use of nanoparticles for current scientific research will be explored.

G-Mosby **Karst Lands - Sinkholes and Caves, Where Does the Water Go?** Hands-on

9:30-10:20 Investigate and Understand Grades 6 - 12 Earth/Space Science

Mosby Carol Zokaites, Virginia Department of Conservation and Recreation http://www.dcr.virginia.gov/natural_heritage/karsthome.shtml

Karst is an area with holes in the rocks. Sinkholes, sinking streams, springs and caves all create ways for surface water to interact with groundwater. The water in a karst watershed follows fractures in the limestone bedrock, sometimes crossing from one surface watershed to another. Where are the karst lands in Virginia? Where does the water go? How where those caves created anyway? Come find the answers and learn ways to teach about karst geology in the classroom.

G-Piedmont II **Introduction to Using Vernier Probeware in Physical Science** Hands-on

9:30-10:20 Technology Grades 6 - 12 Physics/Physical Science

Piedmont II Ray Leonard, Glasgow Middle School, Fairfax County; Verle Walters, Vernier Software and Technology

This is a hands-on session demonstrating how easy it can be to use Vernier LabQuests in the Physical Science Classroom. We will be using Vernier developed labs that tie directly to the VA Physical Science SOLs to introduce you to using this equipment in your classroom. The presenters will lead you through the basics and provide you with some troubleshooting tips so you can stay one step ahead of your students.

2009 PDI Concurrent Sessions • Saturday AM, November 7 • SESSION G - H

G-Potomac II **VIP Share Session** Demonstration

9:30-10:20 Investigate and Understand Grades 6 - 12 Physics/Physical Science

Potomac II Greg Matthes, Robert E. Lee High School, Fairfax County; Tony Wayne, Albemarle High School, Charlottesville; Ron Revere, Washington-Lee High School, Arlington County; Andy Jackson, Harrisonburg High School, Harrisonburg http://vip.vast.org/ default.htm

Members of Virginia Instructors of Physics (VIP) present and discuss demonstrations, labs and explanations of physics phenomena. While geared to HS physics teachers, presenters will be available to help MS and ES teachers adapt materials and lessons to their level.

G-Potomac III **Crazy Traits** Hands-on

9:30-10:20 Investigate and Understand Grades 6 - 12 Biology/Life Science

Potomac III Kat Woodring and John Myers, CPO Science www.cpo.com

Use a one-of-a-kind creature building system to explore the role chance plays in an organism's heredity. Model inheritance mechanisms such as incomplete dominance and co-dominance. Discover how the environment may influence a species' traits using inquiry strategies. Don't stop at the Punnett square, take it to a new level. This is a genetics GALA! Equipment raffle each session.

G-Tarara **Seeds of Science / Roots of Reading Workshop - Gravity and Magnetism** Hands-on

9:30-10:20 Investigate and Understand Pre K - 5 General Science

Tarara Lisa Cofflin, Seeds of Science Consultant www.seedsofscience.org

Seeds of Science/Roots of Reading is a research-based, field-tested curriculum that integrates inquiry science with content-rich literacy instruction. This curriculum development and research project, funded in part by the NSF, addresses the urgent need for materials that help students make sense of the physical world while addressing foundational dimensions of literacy. The integrated science literacy units feature opportunities for students to learn about science through multiple modalities. Free materials and readers, samples of student work and correlations to the Virginia SOLs are included in this interactive workshop.

G-Veritas **Combining Vernier Probes, Online Maps, and GIS Software** Demonstration

9:30-10:20 Technology Grades 3 - College Environmental Science

Veritas George Meadows, University of Mary Washington

This presentation describes the combined use of Vernier probes, online mapping resources, and GIS software. Students used probes, online mapping resources, and the AEJEE program to develop an environmental 'profile' of an area. The results of the study and a description of the organization and implementation of the project, problems encountered, and recommendations for different materials and resources will be provided. Suggestions for implementation at various grade levels will be offered.

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H-122 **Bringing Critters in the Classroom Successfully** Hands-on

10:35-11:25 Investigate and Understand Pre K - 12 Biology/Life Science

Parlor 122 Gina Ridgway, Biome in a Box

Is a better way to engage students than through animals? Classroom pets are the perfect tool for teaching responsibility, stewardship and inquiry. This session will focus on the tips of a veteran teacher, aquarium enthusiast, and long-time environmental educator on the tricks for setting up a classroom habitat that keeps critters safe, involves students in models, and motivates teachers to use their habitat as a teaching platform, student participation, and an opportunity for "green" teaching.

H-222 **Tackling Science VGLA** Hands-on

10:35-11:25 Assessment Grades 3 - 8 General Science

Potomac II Andrew Jackson, Harrisonburg High School, Harrisonburg; Rita Trulove, Stafford County Public Schools

District science coordinators Andy Jackson and Rita Truelove will walk you through how to complete a succesfull VGLA for your 3rd, 5th or 8th grade special education student. Emphasis will be placed on meeting the VGLA requirements and demonstrating the students' knowledge and skills in the least exhaustive manner for the teacher and student.

H-236 **Sharing Strategies to Increase Student Motivation to Learn** Demonstration

10:35-11:25 Investigate and Understand Grades 9 - 12 Physics/Physical Science

Parlor 236 Charles Sabatier, Mount Vernon High School, Fairfax County; Amy Speegle, Marshall High School, Fairfax County; Katey Shirey, Washington & Lee High School, Arlington County; Jason Gipson-Nahman, TC Williams High School, Alexandria

A PLC of DC area teachers will present strategies we have used in our classrooms to increase student motivation to learn. We have focused on various ways of doing this in our classrooms and will present strategies that include Project Based Learning, Incorporating Community Involvement, Making Content Relevant, and others that have been designed to increase student motivation. We will discuss our growth towards our goal and lessons learned as a PLC working toward a common goal.

H-322 **Elementary Level Science Fair & Other Fun Science Activities** Hands-on

10:35-11:25 Investigate and Understand Pre K - 8 General Science

Parlor 322 Gina Craun, Heritage High School, Loudoun County; Jennifer Montgomery, Banneker Elementary School, Loudoun County

The purpose of this session will be to present elementary level teachers resources to conduct a science research project and hold a judged science fair. Participants will be given a set of assignments, grading rubrics, judging forms, and suggestions for conducting a science fair. These materials will be given in text-format and on CDs so that they may be altered to fit with the teacher's individual needs. Additional assignments will include applicable lab activities per elementary science topic.

H-415 **Use of Advanced Organizers in Earth Science** Hands-on

10:35-11:25 Investigate and Understand Grades 6 - 12 Earth/Space Science

Suite 415 Suzanne Wright and Brenda Vrable, Heritage High School, Loudoun County

Participants will be able to construct advanced organizers using Dinah Zike's method of foldables. Examples will be given which will reinforce Earth Science concepts. A hands-on activity will be conducted which will provide teachers with samples to be taken back to their home school.

H-476 **The Scientific Method** Hands-on

10:35-11:25 Investigate and Understand Grades 6 - 8 General Science

Suite 476 Laurie Morgan, Salem Church Middle School, Chesterfield County; Margaret Stevens, Virginia Commonwealth University ACT-ESL

The Scientific Method is more than just a set of steps. It can be a method for prediction as well as a tool used to discover results of an experiment. Join us as we use hands-on-materials to learn the variables, record data, and analyze results.

H-477 **We All Shine On...** Demonstration

10:35-11:25 Technology Grades 6 - 8 Physics/Physical Science

Suite 477 Denise Oppenhagen, Rippon Middle School, Prince William County

What do vampires, kids, and the environment have in common? Electricity. Come to this session to hear how one teacher squeezed an important environmental lesson into our already packed Physical Science curricula with Kill-a-Watt monitors. You will leave with inexpensive sources for these monitors as well as ways to integrate it into your classrooms.

H-478 **Establishing a Local Community Nature Initiative** Demonstration

10:35-11:25 Inquiry in the Field Pre K - 8 Environmental Science

Suite 478 Dennis Casey, Virginia Museum of Natural History www.vmnh.net

The Virginia Museum of Natural History's Community Nature Initiative offers children, youth, and adults an interactive approach to outdoor learning. By using nature to stimulate learning, the program aims at generating new excitement for nature and outdoor learning experiences through a variety of program designs. After completing the first of a three-year grant-funded project, session participants will learn about the successes and challenges and the future direction of the project.

H-Chrysalis **Creating Success In Science with Interactive Notebooks** Hands-on

10:35-11:25 Investigate and Understand Grades 6 - 8 General Science

Chrysalis Shannon Goodrich and Star Hanchey, Northside Middle School, Loudoun County

Learn the techniques of creating interesting and informative interactive notebooks that will generate success with your students in science. They can be used not only for class notes, but also to allow students to express their own ideas and process the information presented in class. These interactive notebooks will enable students to expand their creativity while developing into independent thinkers and better writers.

H-Fairfax **Using Hands-on Projects for Teaching Chemistry SOL** Demonstration

10:35-11:25 Investigate and Understand Grades 9 - 12 Chemistry

Fairfax Sandra Sumrall-Lloyd, Culpeper County High School, Culpeper County

The study of the chemistry of water encompasses many of the SOL requirements in chemistry. Creating a topic driven classroom rather than a textbook driven one should increase the attention and interest of the students. This semester long "project" focuses on water chemistry starting with why water is so important and through a focus on water teaches physical and chemical properties, solution chemistry,ionic and covalent bonding, colligative properties, acid-base concept, and more.

H-Mosby **Virginia Bats and White Nose Syndrome - What are we doing?** Hands-on

10:35-11:25 Investigate and Understand Grades 3 - 12 Biology/Life Science

Mosby Carol Zokaites, Virginia Department of Conservation and Recreation http://www.dcr.virginia.gov/natural_heritage/karsthome.shtml

Bats with White Nose Syndrome (WNS) are being found in Virginia caves. The WNS disease is named after the white fungus that grows around the nose and on the wings of the bats. This disease has already killed 500,000 bats in New England. How will the disease progress through the summer and into the fall in VA bats? Will the bats survive next winter? What happens to the environment if thousands of bats die? Recent field studies by the scientists and activities for the classroom will be presented.

2009 PDI Concurrent Sessions • Saturday AM, November 7 • SESSION H - IJ

H-Piedmont II **Vernier Probeware - Beyond the Basics** Hands-on

10:35-11:25 Technology Grades 6 - 12 Physics/Physical Science

Piedmont II Ray Leonard, Glasgow Middle School, Fairfax County; Verle Walters, Vernier Software and Technology

This session is for those who have used Vernier probeware and are ready to go beyond the basics. In addition to setting up and using the equipment in Vernier developed labs, you will have the opportunity to learn how to modify the settings in order to create labs of your own. We will also cover how to update the LabQuest firmware and software.

H-Potomac II **Google Earth: Science from a New Perspective** Demonstration

10:35-11:25 Technology Grades 6 - 12 General Science

Potomac II Alison Smith, Ronald Dibling-Moore, Alex Stimac, and Bridget Mulvey, University of Virginia

Building on last year's presentation, we highlight new Google Earth tours for Biology, Environmental Science, and Earth Science. Using Google Earth, a free online program, we showcase examples and lessons to encourage student exploration of our planet. Join us as we gain a new perspective on our planet and maximize student learning! All participants receive a free CD containing many tours and strategies for incorporating Google Earth into instruction.

H-Potomac III **Energy and the Rollercoaster** Hands-on

10:35-11:25 Investigate and Understand Grades 6 - College Physics/Physical Science

Potomac III Kat Woodring and John Myers, CPO Science www.cpo.com

Where do you scream the loudest on a rollercoaster? Where does it move the fastest? In this workshop you will use an electronic timing system to measure the speed of a marble as it moves up and down a rollercoaster. In the process, you will develop a practical, hands-on understanding of the Law of Conservation of Energy. The nature of potential energy, kinetic energy, and other forms of energy will be explored and discussed. Equipment raffle in each session.

H-Tarara **No Time for Science? Seeds of Science...A SOLUTION!** Hands-on

10:35-11:25 Investigate and Understand Pre K - 5 General Science

Tarara Sherrie Roland, Seeds of Science Consultant www.seedsofscience.org

Seeds of Science/Roots of Reading is a research-based, field-tested curriculum that integrates inquiry science with content-rich literacy instruction. This curriculum development and research project, funded in part by the NSF, addresses the urgent need for materials that help students make sense of the physical world while addressing foundational dimensions of literacy. The integrated science literacy units feature opportunities for students to learn about science through multiple modalities. Free materials and readers, samples of student work and correlations to the Virginia SOLs are included in this interactive workshop.

H-Veritas **Chesapeake Live: Using Live Telepresence to Engage Students!** Demonstration

10:35-11:25 Inquiry in the Field Grades 6 - 8 Environmental Science

Veritas Ashley Brownley, NOAA Chesapeake Bay Office

Based off the nationally successful Estuaries Live initiative, Chesapeake Live leverages real-time technologies and live telepresence to enhance place-based education and bring North America's largest estuary into the classroom. Students learn about sea level rise, storm water management, oyster restoration, sturgeon tracking, and more from a host of Bay content experts. Learn about the Chesapeake Live 2009 pilot that took place in Hampton Roads, and where this watershed initiative is going next.

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IJ-Mosby **NASA Returns to the Moon**

Hands-on

12:00-1:55 Investigate and Understand Grades 3 - 8 Earth/Space Science

Mosby E. Dynae Fullwood, NASA Langley Research Center

NASA's Lunar Reconnaissance Orbiter will scout the landscape of the Moon for future landing sites, polar resources, lunar science goals, and safety hazards. Come and be engaged in activities that use this mission to teach about the origins, landforms, and geology of the Moon.

IJ-Potomac III **Race Into Physics With the New CPO Science Energy Car** Hands-on

12:00-1:55 Investigate and Understand Grades 6 - College Physics/Physical Science

Potomac III Kat Woodring and John Myers, CPO Science www.cpo.com

Combine a unique photogate system with an innovative multi-use car and track system and you have a series of fantastic inquiry-based investigations that will benefit teachers. Participants set up the track, conduct investigations and perform exciting experiments that demonstrate all of Newton's Laws of Motion. Friction, inertia and momentum are integrated with our student text to offer participants a complete learning experience. Equipment raffle each session.

I-122 **Exploring Biology with Digital Images and Video** Demonstration
12:00-12:50 Technology Grades 6 - 12 Biology/Life Science
Parlor 122 Amanda Massie, William Flickinger, Kara Himelfarb, Pablo Zatz, and Randy Bell, University of Virginia
Digital images and video are an excellent way to engage students in science content. In this session, participants will learn a variety of strategies for incorporating digital images into biology and life science instruction. We will provide you with the tools you need to locate and integrate images and video into student-centered lessons. Participants will receive a CD containing a collection of digital images, videos, and example lessons.

I-136 **FieldScope: Estuaries - RealScience, Real Data, Real Solution** Demonstration
12:00-12:50 Technology Grades 6 - College Environmental Science
Parlor 136 Cindy Duncan and Bill Portlock, Chesapeake Bay Foundation http://www.nationalgeographic.com/field/projects/cbfieldscope.html
This presentation will introduce participants to a brand new web-based tool that incorporates the use of geographic data to further explore environmental issues and facilitate environmental literacy in multiple audiences. Developed by National Geographic Society, Chesapeake Bay Foundation and NOAA Chesapeake Bay Office, the tool is designed to utilize the vast amounts of real science and data accessible via the web to help learners understand complex relationships that exists within estuaries.

I-222 **Starting an Ecology Club** Demonstration
12:00-12:50 Inquiry in the Field Grades 3 - 8 Environmental Science
Parlor 222 Susan Bardenhagen, Union Mill Elementary School, Fairfax County
Presenter has coordinated a variety of ecology clubs with different projects and programs for grades 2-8 for 20 years. Actual project ideas and samples, support materials, and contact information will be provided. Many ecology clubs provide support to the regular classroom in relevant Science concepts.

I-236 **Table Top Physics Share Session** Hands-on
12:00-12:50 Investigate and Understand Grades 6 - 12 Physics/Physical Science
Parlor 236 Tony Wayne, Virginia Instructors of Physics http://vip.vast.org/VAST2009
Physics teachers demonstrate and discuss eye-catching displays – how they work, how to make them and the principles behind them. Attendees are invited to come and go during the time period to discuss and play with the setups.

I-322 **Science Literacy, Using Technology, for Dummies** Demonstration
12:00-12:50 Technology Grades 3 - 8 General Science
Parlor 322 Ray Leonard and Cherith Pierson, Ellen Glasgow Middle School, Fairfax County
This workshop will focus on helping teachers unfamiliar with using technology engage students. Session will focus on how to combine instructional technology resources with Marzano's research to support student learning and increase student achievement, especially in Science content area reading and vocabulary instruction.

I-415 **Testing a Teaching Kit for Virginia Fossils and Exobiology** Hands-on
12:00-12:50 Investigate and Understand Grades 6 - 12 Earth/Space Science
Suite 415 Llyn Sharp, Virginia Tech
Participants will explore the activities of a teaching kit developed to support Earth Science SOLs in paleontology (5th and 9th grade). Examples of fossils of different ages in Virginia are used to present concepts and highlight scientific methods of study for ancient environments. Virginia Tech's research on very early fossils highlights the link between the study of the early Earth and the search for life on other planets. Participants will assist with evaluating the kit contents and activities.

I-416 **C.S.I.: Creative Science Instruction Through Crime Scene Investigation** Hands-on
12:00-12:50 Investigate and Understand Grades 6 - 12 Biology/Life Science
Suite 416 Brena Daniels and Heather Smith, Portsmouth Public Schools Office of Science
Crime scene investigation is all the rave amongst middle/high school students. They love CSI! So, why not bring what students enjoy into their science class? The focus of the workshop will be on the ".1 standards" (6.1, LS.1, PS.1, ES.1, BIO.1, CH.1, etc.) that address a range of scientific investigation skills and how to use CSI to teach them. Workshop guests will get down and dirty with a real-life crime investigation and obtain resources for immediate use in this year's lesson plans.

I-417 **Connecting Teachers and Students Virtually** Demonstration
12:00-12:50 Technology Grades 3 - College General Science
Suite 417 Cheri Kelleher, MathScience Innovation Center http://my-resources-for-you.wikispaces.com
Learning opportunities in a stimulating real-time virtual environment that can be accessed from a web address on any computer are just a mouse click away. See examples of how the MathScience Innovation Center is providing quality, product-driven professional development that impacts classroom instruction and promotes networking among participants. Experience virtual lessons that are delivered in real time to students across our consortium. Explore the opportunities by signing up for your own free Elluminate Live! virtual room today.

I-476 **Have Fun in Science Class? Absolutely!!!** Hands-on
12:00-12:50 Investigate and Understand Grades 6 - 12 General Science
Suite 476 Margaret Stevens, Virginia Commonwealth University ACT-ESL
Games, puzzles, tricks of the trade. Come learn some additional activities to put in your bag of tricks. Great help for ELL's and reluctant learners as well as inspiration for interested students. Join me as we explore how to have more fun in science while the students are enriched with academics.

I-477 **So, What Is Modeling? So What?** Hands-on
12:00-12:50 Grades 6 - 12 Physics/Physical Science
Suite 477 George Dewey, Chantilly High School, Fairfax Co. and Melissa Booker, Robinson High School, Fairfax Co.
Join us for hands-on activities and discussion of the approaches used to enable students to construct a variety of evidence-based models to deepen their comprehension of laboratory experiences in physics. Also applicable for chemistry and earth-space science classes.

I-478 **Using Student Generated Questions in Class** Demonstration
12:00-12:50 Investigate and Understand Grades 6 - 8 General Science
Suite 478 Brita Hampton, Star of the Sea Catholic School, Catholic Diocese of Richmond
We all know that using student generated questions is the best way for students to learn, but how on earth do you actually do this in a real classroom? Come and see how one middle school teacher uses the questions that her students pose to accomplish her task of teaching the curriculum. It's all about dividing and conquering. Come and check it out!

I-Chrysalis **What's With All of These Rocks?** Hands-on
12:00-12:50 Investigate and Understand Grades 6 - 12 Earth/Space Science
Chrysalis Sam Hollins, Virginia Transportation Construction Association
The Virginia Transportation Construction Association (VCTA) has provided free samples from each of their member properties, but this session will help you to sort them out by what they mean, geologically and pedagogically.

I-Fairfax **VAST Chemistry Committee Chemistry Share-a-Thon** Demonstration
12:00-12:50 Investigate and Understand Grades 9 - 12 Chemistry
Fairfax Donna Armani, Briar Woods High School, Loundon County; Leslie Kovach, The Steward School, Richmond
Several chemistry teachers throughout Virginia will share effective ideas and strategies used in their classrooms, including instructional techniques, labs, and demonstrations. Come and learn about some new or enhanced ideas for your classroom! Handouts will be provided.

I-Piedmont I **Butterflies In Your Classroom** Hands-on
12:00-12:50 Investigate and Understand Grades K - 12 Biology/Life Science
Piedmont I Carolina Biological Supply Company www.carolina.com
Bring excitement into your classroom with The Painted Lady butterfly (Vanessa cardui). The small insect is easily raised and cultured year-round. Session includes guidance on care of the butterfly in every life stage. It also meets National Science Standards for characteristics, life cycles, and reproduction. Free living sample and activities.

I-Piedmont II **Discover Activities and Resources that Teach Physical Science!** Hands-on
12:00-12:50 Inquiry in the Field Grades 3 - 8 Physics/Physical Science
Piedmont II Lisa Surles-Law, Steve Gagnon, and Christine Wheeler, Jefferson Lab http://education.jlab.org
Workshop activities will address teaching general physics and chemistry to upper-elementary and middle school students. Participants will be engaged in activities they can easily conduct in their classrooms, and that can be easily modified for students in grades 4-8. Attendees will receive materials AND resources. In addition, demonstrations built by teachers who have participated in the U.S. Department of Energy's Academies Creating Teacher Scientists program at Jefferson Lab will be highlighted.

I-Potomac I **Talking Conservation: Strategies and Advice for Teachers** Demonstration
12:00-12:50 Grades K - 8 Biology/Life Science
Potomac I Quinn Robinson, Environmental Educator, The Wildlife Center of Virginia
How can we effectively foster a conservation ethic in our students? While doing so is a priority for many science teachers, conservation is a difficult subject to tackle in the classroom: the issues are big, complicated, politically charged, and often downright depressing for teachers and students alike. Drawn from the educational philosophy of the Wildlife Center of Virginia, this session will provide teachers with advice and practical strategies for making conservation issues accessible, relatable, and meaningful to students.

I-Potomac II **Teaching Physical and Earth Science with Digital Media** Demonstration
12:00-12:50 Technology Grades 6 - 12 General Science
Potomac II Laura Stocke, Elizabeth Frank, Jennifer Maeng, and Randy Bell, University of Virginia
Join us to learn more about using digital images and video to enhance instruction in physical science and earth science classrooms. In this session, participants will learn a variety of strategies for incorporating digital media into instruction. We will provide you with the tools you need to locate and integrate images and video into student-centered lessons. Participants will receive a CD containing a collection of digital images, videos, and example lessons.

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I-Veritas **Your World Project: Make A Positive Impact** Demonstration

12:00-12:50 Inquiry in the Field Grades 9 - College Environmental Science

Veritas Constance Bolte, James River High School, Chesterfield County

AP Environmental Science students at James River High School pick a relevant cause to support as a class. The goal is to departmentalize the responsibilities and, ultimately, produce an effective campaign and/or event. Last school year, four classes competed for the most positive environmental impact. Impacts included a river clean-up, reduction in styrofoam usage, reduction in plastic bag usage, and greening of a local concert. This presentation is a reflection of these accomplishments.

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J-122 **Simulating Biology: Computer Simulations to Promote Learning** Demonstration

1:05-1:55 Technology Grades 6 - 12 Biology/Life Science

Parlor 122 Michael Chapman, Noah Egge, Megan Hidy, Jennifer Maeng, and Randy Bell, University of Virginia

Incorporating computer simulations into instruction are a great way to enhance biology and 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. All participants receive a CD containing activities, inquiry-based lessons, strategies for incorporating simulations into instruction, and an annotated list of simulations available on the Internet.

J-136 **Physical Science and Physics Courses for Teachers at UVA** Demonstration

1:05-1:55 Investigate and Understand Grades K - College Physics/Physical Science

Parlor 136 Richard Lindgren and Steven Thornton, University of Virginia http://www.k12.phys.virginia.edu/

We will discuss the wide variety of professional development courses in physical/Earth science and physics for K-12 teachers offered by the University of Virginia Physics Department. Many courses are offered through distance-learning on the Internet. Information will be given about our Master of Arts in Physics Education degree, in which we are graduating almost 20 teachers a year and currently have more than 70 degree candidates. Most teachers take our courses for increased content and certification.

J-222 **Teaching Physical Science with Magic** Demonstration

1:05-1:55 Investigate and Understand Grades 6 - 8 General Science

Parlor 222 Robert Ellis, South County Secondary, Fairfax County

This session introduces teachers to the art of the magician. Attendees will learn basic magic principles, skills and props used in lab demonstrations. These inquiry based events reinforce a student's ability to observe, predict and infer before providing possible explanations. Also, students can design and conduct their own investigations. All activities are aligned with the Virginia SOL (PS.1-11), and comply with SOL and NSTA safety guidelines.

J-236 **From Atoms to Electons - Teaching Nuclear Energy** Hands-on

1:05-1:55 Grades 6 - 12 Physics/Physical Science

Parlor 236 Hallie Mills, NEED Project www.need.org

Interested in teaching about nuclear energy? One third of Virginia's electricity is generated from nuclear power. Use hands-on activities designed to expand knowledge of energy and nuclear energy while providing teachers with resources to take back to their classrooms and use tomorrow. The NEED Project is a non-profit organization dedicated to energy education. All NEED materials are teacher-tested and correlated to the Virginia SOL.

J-322 **Formative Assessment Using a Student Response System** Demonstration

1:05-1:55 Assessment Grades 9 - 12 General Science

Parlor 322 Laura Casdorph, Douglas Freeman High School, Henrico County

Learn how to use a student response system (clickers) in your classroom for formative assessment. Clickers can be used to promote active student engagement during a lecture, to promote collaboration among students during class, to encourage participation from every student in a class, to create a safe space for shy students to participate in class, to check for student understanding during class, and to teach in a way that adapts to the immediate learning needs of your students.

J-415 **Gravity and the Moon: An Innovative Way to incorporate STEM** Demonstration

1:05-1:55 Investigate and Understand Grades 3 - 8 Earth/Space Science

Suite 415 Clair Berube, Education, Virginia Potocki, STEM Educational Consulting

This lesson was taught by the presenter at the NASA Pre-Service Teaching Institute held at NASA Langley during the summer of 2009 and teaches students 1) about what gravity really is and 2) why astronauts need to know about gravity as they journey to the moon. This lesson raises future teachers' awareness of mathematics, science, and technology challenges in tomorrow's classroom. It combines Einstein's theory of relativity and astrophysics to teach middle school students about gravity.

J-416 **University/High School Outreach: Variations on a Theme** Demonstration

1:05-1:55 Investigate and Understand Grades 9 - College Biology/Life Science

Suite 416 Charles Jervis, Auburn High School, Montgomery County; Jody Jervis, Virginia Tech Biochemistry Dept.

Are you and your students tired of canned labs? Do your students enjoy hands-on lab work but resist mechanically formatted write ups? High school classes can engage students by incorporating cutting edge research. Challenging projects allow open ended thinking and innovation. Student testimonials and research results illustrate how our program, which works with the evolutionary success of cyanobacteria, can serve as a model to ameliorate the one size fits all approach to outreach.

J-417 **Podcasting Made Easy!** Demonstration

1:05-1:55 Technology Pre K - College General Science
Suite 417 Cheri Faley and Amol Patel, Heritage High School, Loudoun County

It's easy! Spend an hour learning to use podcasts/ipods to increase student involvement. Whether you have a Promethean/Smart board or just a computer, you can write lessons to engage students in class or from home to individualize instruction/remediation. Great for a sub, inexpensive software lets you use technology that kids think is cool! They will beg you for more. We have feedback! We will show examples and explain step-by-step use of software. Bring home a CD with how-to instructions.

J-477 **Nanoscience Meets Today's Classroom** Hands-on

1:05-1:55 Investigate and Understand Grades 6 - 12 Environmental Science
Suite 477 Lorin Wharton, MathScience Innovation Center, Richmond http://www.msinnovation.info

Is your water really clean? Is there a way to restore nature after it has been destroyed by human activity? The emerging field of nanotechnology is finding answers to these questions and many more. In this session, explore how physical properties change at the nanoscale and how scientists are applying these properties to water purification and environmental remediation. Hands-on investigations of nanoscience will encompass nanofiltration and using a photocatylsis to degrade a water polluntant.

J-478 **The Interactive Classroom** Hands-on

1:05-1:55 Investigate and Understand Grades 3 - 8 General Science
Suite 478 Brita Hampton, Star of the Sea Catholic School, Catholic Diocese of Richmond

Nothing is more excruciating for the students, or the teacher, than a boring lesson! This session will give practical ideas to spice up any class. Come and learn strategies that will engage your students both in and out of their seats. The activities that will be shared can be used in just about every grade level. Why not check it out? You won't be disappointed!

J-Chrysalis **JASON Science: Maximizing Online Learning for Students** Demonstration

1:05-1:55 Technology Grades 6 - 8 Earth/Space Science
Chrysalis Robin McDougal, Fairfax County Public Schools

See how Fairfax County teachers are using The JASON Project to engage middle school students through a summer of science. In this fast-paced, hands-on session, you will refresh your scientific knowledge with online resources aligned to VA standards, learn effective instruction strategies for complex scientific concepts using web-based simulations and video games, encourage students' critical thinking and problem solving skills with Missions lead by JASON Host Researchers, and walk away with FREE resources!

J-Fairfax **Making "Cents" of Chemical Equations** Hands-on

1:05-1:55 Investigate and Understand Grades 6 - 8 Chemistry
Fairfax Amanda Sargent, Clifton Middle School, Alleghany County

This session demonstrates how students can work with coins to create models of balanced chemical equations. They verify balance by showing that they have the same number of each type of coin (atoms of each element) on both sides of their equations. They verify chemical reaction by showing that there is some new substance (different combination of coins) on the product side. They identify reaction type based on how they change coin combinations. Quick, Easy, Fun!

J-Piedmont I **STC®: Changes** Hands-on

1:05-1:55 Investigate and Understand Pre K - 5 Physics/Physical Science
Piedmont I Carolina Biological Supply Company www.carolinacurriculum.com

Change is all around us. This hands-on unit lets students investigate physical and chemical changes that affect their daily lives. Session starts with an overview of The STC PROGRAM™ , followed by sample unit activities. Developed by the NSRC, STC® is available only from Carolina Biological Supply Company.

J-Piedmont II **A High School GIS Course: School-to-Career Connection** Demonstration

1:05-1:55 Technology Grades 9 - 12 General Science
Piedmont II Jon Pruess and Michael Wagner, Heritage High School, Loudoun County

A successful dual-enrollment Geospatial Technology course, in collaboration with the JMU ISAT college, is presented for teachers and curriculum specialists interested in offering a rigorous ArcGIS-based course for high school students. Curriculum development, network issues, staffing, materials and equipment, piloting efforts, examples of student projects, student internships, and obtaining program of studies approval from the school board will be emphasized.

J-Potomac I **Buzzers Ready? Science Competitions for Science Geeks** Hands-on

1:05-1:55 Grades 9 - College General Science

Potomac I Carol Stapanowich and William Dunn, Bishop Sullivan Catholic High School, Diocese of Richmond; Carol Hopper Brill, Virginia Sea Grant Marine Advisory Program, Virginia Institute of Marine Science

Science competitions provide the unique learning experiences that our brighest students crave. Competitions are an outlet for students' academic energy and keep the top of the class motivated. This presentation will highlight the benefits of entering the National Ocean Sciences Bowl or the National Science Bowl to the students, faculty, and school. We will also provide the opportunity for you to test your own knowledge and strategic intuition with a mock competition.

J-Potomac II **Virginia Air and Space Center** Hands-on

1:05-1:55 Grades K - College Earth/Space Science

Potomac II Ken Flick, NASA Langley Educator Resource Center

NASA Langley Educator Resource Center covers all the sciences for teachers K-12. Some of the materials available include teachers guides, posters, briefs, and a vast video library. All this "STUFF" is FREE, all return mail is "FREE". Workshops can be arranged at the Center or in local school districts. This presenter will tell you how to obtain materials and arrange for workshops. Unique material such as Lunar Samples are also available though this resource service.

J-Veritas **Utilizing Geospatial Tech in Science Elective Field Studies** Demonstration

1:05-1:55 Technology Grades 6 - College Environmental Science

Veritas Michael Pratte and Cherise Hodge, Mountain View High School, Stafford County

This seminar will demonstrate how GPS units & the ArcGIS software can be utilized in Environmental and Earth science elective field studies where students collect, analyze, and transform data into a visual and active medium that will enable them to demonstrate both spatial relationships and problem solving skills. A special focus on how this can meet IB/AP requirements, trouble shooting student file collaboration on a school server, and how to create a finished presentation CD will be discussed.