VAST Concurrent Sessions
Professional Development Institute
Roanoke, Virginia
November 17-18, 2017

Session 1 • Friday • 8:30 - 9:20 am

I've Lost My Marbles! Harrison/Tyler
Elyse DeQuoy, D.G. Cooley Elementary School; Jennifer Lemieux, D.G. Cooley Elementary School ELEM

Math in Science

Come and learn how to implement and use marble runs and marble mazes for a variety of ages and skill levels in the classroom while teaching and learning about math, science, and engineering. Walk away with some ideas you can use right away with everyday items.

Science Literacy Learning through Atmosphere Investigations Crystal Ballroom D
Tina Harte, NASA Langley ELEM

Earth/Space Science

NASA Langley Research Center will feature the Atmosphere Elementary GLOBE storybooks: Clouds, Aerosols, and Climate. In each book the characters explore their world through data collection. In the elementary GLOBE learning activities, students can explore their own environment. Each participant will explore the newly updated Elementary GLOBE Implementation Guide that incorporates STEAM-based learning experiences, get a sneak peek of the new Elementary GLOBE eBooks, receive a book and learning activities. (not-for-profit exhibitor presentation)

NGSS Engineering for Everyone With Everyday Materials Buck Mtn. A
Arthur Bowman, Norfolk State University ELEM-MS

Engineering

Learn how everyday items found in schools, homes and anywhere else can be used to teach engineering concepts in the grades K-8. Attendees will become knowledgeable in selecting and creating engineering lessons aligned with the VA SOLs and the NGSS. Use of authentic formative assessments will be demonstrated. Engineering design briefs, and a selection of published curriculum materials will be presented. Every teacher and child is prepared to learn engineering.

Makey Makey Fun and 21st Century Literacy, Crystal Ballroom B
Adam Daniel, Science Museum of Western Virginia ELEM-MS

General Science

Makey Makey's are great tools to introduce creative circuits to your students and teach them 21st century skills such as coding, problem solving, creative/critical thinking, and project-based learning. They are used for science content but extend to math, English, special education, and beyond with a little bit of imagination. You'll get a chance to experience some of the basics in this hands-on workshop, because the best way to learn is sometimes to do. (a laptop will be needed to use a unit) (not-for-profit exhibitor presentation)

Newly Released E-Units by Project Learning Tree Washington Lecture Hall
Page Hutchinson, Virginia Dept. of Forestry/Project Learning Tree ELEM-MS

Environmental Science

PLT has just released three new E-Units: Treemendous Science for K-2, Energy in Ecosystems for grades 3-5 and Carbon and Climate for grades 6-8. Each unit includes Pre and Post assessments, detailed step-by-step lesson plans, download-able student pages, an evaluation rubric, links to other resources, and alignment with national standards. Each unit supports learning progression organized around the 5E Instructional Model. Come learn about and experience these exciting new units! (not-for-profit exhibitor presentation)

Gas Exchange Wilson
Linda Culpepper, Lab-Aids MS

Biology/Life Science

Teachers know their students have many misconceptions about respiration. In this activity from the SEPUP middle level life science program, participants use an acid-base indicator to determine the relative amount of carbon dioxide gas in a sample of their exhaled breath. They consider differences in individual response, explore qualitative vs. quantitative measures, and examine the structure of the lungs and their role in the process of respiration. (commercial exhibitor presentation)

Vocabulary and Literacy Strategies for Middle School Science Crystal Ballroom C
Janine D'Elia, Salem Church Middle School; Rachel Hill, Salem Church Middle School MS

General Science

Discover how to reinforce vocabulary and literacy strategies in the middle school classroom. Learn engaging activities and ways to encourage students' retention of vocabulary. Strategies can be implemented immediately!

Boxplots and Histograms: Examining Shape and Spread Jefferson Boardroom

Virginia Lewis, Longwood University MS

Math in Science

The 2016 Mathematics Standards of Learning introduce histograms in seventh grade and boxplots in eighth grade. In this session we will explore how middle school science teachers can effectively use these graphical displays to help their students analyze and interpret data in the biological, physical, and earth sciences.

Tiered Differentiation in Biology and Chemistry Monroe

Julia Kogut, Winchester Public Schools; Cathy Clark,Winchester Public Schools MS-HS,

Biology/Life Science

Tiered differentiation can seem overwhelming to create. Determining the appropriate pre-quiz, when to do the pre-quiz, how to group students, what your different leveled activities should be & making sure you have a final assessment to bring it all together in the end can take a lot of time to create from scratch. Learn some basics about how to tier, how to turn current lessons easily into tiered differentiated lessons, and walk away with some classroom-ready examples in biology and chemistry.

Moving Students from Passive to Active Learners Tinker Mtn.

Robbie Higdon, James Madison University MS-COL

General Science

In this session, participants will engage in a content-focused lesson based on a learning cycle model. Then, we will explore the characteristics of this lesson that actively engaged ALL learners at each step of the instructional plan. Finally, participants will have the opportunity to take an existing lesson and transform it to include examples of active, meaningful learning experiences for all students within any content area.

Water ECubeG Research Connection in the Classroom Bent Mtn.

Mark Madden, Cave Spring High School; Alicia McGeorge, Franklin Co. High School; Jodie Caldwell, Lord Botetourt High School HS-COL

Environmental Science

Water research has drastically increased as of the past decade due to a decrease in the amount of potable, or fresh, water available to an ever increasing human population. This session will focus on the importance of engaging students in water research opportunities being conducted in Virginia in order to build critical thinking and problem solving skills.

Integrating Chromebook with Vernier Technology Crystal Ballroom E

Jackie Bonneau, Vernier Software & Technology; Patty Rourke, Vernier Software & Technology ALL GRADES

General Science

Participate in fun and engaging experiments that have you compare grip strengths, investigate pressure and volume relationships, and match position graphs, all using Vernier digital tools with Chromebooks. See how sensor-based experiments teach students about data collection and analysis practices that promote science inquiry, improve science literacy, and boost test scores. (commercial exhibitor presentation)

Planting Science: A Scientist / Student Partnership Mill Mtn.

Amy Chattin, Franklin County High School; Cassidy Fasick, Franklin County High School ALL GRADES

Biology/Life Science

Planting Science is a free online resource for teachers that allows students to connect with practicing plant scientists. Small student teams design and carry out plant related experiments under the mentorship of a plant scientist, allowing students to engage in hands on science, enhancing team skills and an understanding of science. Participants will be introduced to the program, the various modules and resources available through the program, and some techniques to practice with students.

Hands On Physics and Renewable Energy Crystal Ballroom A

Harold Geller, George Mason University ALL GRADES

Physics/Physical Science

Participants will be exposed to, in a group problem-solving venue, a number of hands-on activities and computer simulations pertinent to the concepts of physics as applied to renewable energy and the environment. This includes the basics of thermodynamics and heat engines; oil drilling exploration; solar energy; wind energy; electrical energy usage and costs; nuclear power plant operations; energy efficient home design; and, automobile fuel efficiency cost effectiveness.

eMediaVA _ Science Comes Alive with Free Class Resources Madison

Jane James, eMediaVA ALL GRADES

General Science

What is eMediaVA? It is a web-based collection of over 129,000 free video, audio, graphic, and text based instructional resources from trusted providers like NASA, National Geographic Education, Science Museum of Virginia, and many more. Teachers can conduct site searches by SOL; stream and download media; upload and publish personal digital teaching resources; create assignments, quizzes and new learning objects; and much more.

Collect VAST Bucks! Visit the Exhibit Hall. Don't be shy. You just have to ask.

VAST Bucks are used to bid on science supplies and more at Friday night's auction.

Session 1 • Friday • 8:30 - 9:20 am

Getting the Best Out of VAST: A Session for First-Time Attendees Roanoke Ballroom AB

Jacqueline McDonnough, Retired; Eric Pyle, James Madison University; Shirley Sypolt, Cooper Elementary School ALL GRADES

General Science

Navigating the PDI can be a daunting task for first time attendees at VAST. This session will give first time attendees tips for untangling the many offerings and focusing in sessions that fit their specific needs. The session presenters will help first timers set their professional development goals for the PDI, assess offerings and plan what sessions they will attend. Attendees will leave the session ready to get the most of their PDI attendance.

Literacy in the Lab: Best Practices for Instructing ELs Brush Mtn.

Alexis Rutt,University of Virginia; Jeff Peake, Skyline Middle School ALL GRADES

General Science

Have you ever looked at "Science" as a foreign language? As more English Learners join mainstream science classrooms, the task of literacy instruction is expanding to science teachers. Science is its own language that needs to be intentionally taught, with unique vocabulary and syntax. In this session, you will learn practical ways to better support ELs in their language learning. Methods will be shared to target language arts and numerous scientific concepts.

Session 2 • Friday • 9:35 - 10:25 am

Incorporating Scientific Modeling in the 1st Grade Classroom Crystal Ballroom B

Melani Loney, Old Dominion University; Joanna Garner,Old Dominion University ELEM

General Science

Modeling has been a component of science for many years, but has been slow to be incorporated into science classroom due to issues with implementation. This hands-on workshop will provide elementary teachers with a step by step process for implementing modeling as part of science instruction. Teachers will learn how to align the practice of modeling with the Virginia Standards of Learning in Science and will participate in a modeling activity that is aligned to the first grade SOL 1.4.

PBL: Solving Real-world Problems with a Literacy Twist Madison

Jennifer Maeng, University of Virginia; Amanda Gonczi, Michigan Technical University ELEM

General Science

Problem-based learning (PBL) units can support interdisciplinary approaches to science instruction, including integration of literacy. In this session, participants will first learn what PBL instruction is. Then, we showcase inquiry-based activities that integrate literacy from several SOL-based PBL units developed by elementary teachers in the VISTA ELIS project. Participants will consider how they can apply these ideas in their instruction and receive resources for the showcased activities.

Have Seeds Will Travel: Teaching Plants with Engineering Washington Lecture Hall

Anne Mannarino, Regent University; Page Hutchinson,Virginia Department of Forestry ELEM

Engineering

Teaching Plants with Engineering Design: Engage students in a hands-on STEM activity from Project Learning Tree. Students will observe, identify, & model ways plants disperse seeds. Challenge students to think about why seed dispersal is important, & investigate dispersal mechanisms using engineering design. Illustrate how the size, shape, weight, and dispersal strategies of seeds affect the distance they travel. You will design, create, and test seed dispersal models.

Growing Young Minds with Agriculture in the Classroom **Buck Mtn. A**

Tammy Maxey, Virginia Agriculture in the Classroom ELEM

General Science

Join Agriculture in the Classroom for a lively and interactive session that will sprout success in your K-5 classroom. Participants in this session will enjoy unique lessons and make-and-takes that use Virginia agriculture and natural resources as the hands-on medium to address science standards such as Earth's Resources and Life Processes, along with other cross-curricular applications. Session attendees will receive curriculum and other resources for their classrooms.

VT Science Festival: Science is Bigger Than You Think Brush Mtn.

Phyllis Newbill, Virginia Tech. ELEM-MS

General Science

Science attitudes are improved when learners have informal science education opportunities, such as science festivals. Science festivals are intended to be fun, memorable, and inspiring. Held each fall, the Virginia Tech Science Festival gives learners the opportunity to talk with scientists of all ages about their work and what inspires them. Each of the over 80 exhibitors has a different hands-on experience that helps learners understand that "science is bigger than you think".

Chemistry and the Atom: Fun with Atom Building Games! Monroe

Erik Benton, School Specialty Science; Paul Glodek, School Specialty MS-HS

Chemistry

Understanding abstract concepts about atoms can be difficult. Use our model to experience innovative games and activities that present students opportunities to grasp atomic structure and its connection to the periodic table. (commercial exhibitor presentation)

Real Science: Science Teachers in Research Labs Mill Mtn.

Melissa Bills, Holman Middle School; Eric Byers, Highland Springs High School; SheAnna McCloud, Highland Springs High School; Rosalyn Hargrave, Virginia Commonwealth University MS-HS

Earth Science/Biology

Come learn about an exciting summer opportunity where YOU can be a researcher at VCU and bring authentic science into your classroom. You will receive exemplary activities created for middle and high school students in the areas of Earth Science and Biology from these experiences and participate in the exciting "Immune System Relay"! The presentation will close with information on how YOU can become a HERO-T fellow at VCU.

Making Student Research a Reality Jefferson Boardroom

Julia, Cothron, STEM Author, Consultant, Advocate/VJAS MS-HS,

Math in Science

Adequate time and high stakes testing have hindered student research. Learn effective strategies for incorporating research including a) building a common set of knowledge and expectations among teachers, b) modifying existing labs to emphasize scientific and engineering practices, c) engaging students in extended labs and mini-projects, d) supporting self-selected students in entering competitions (VJAS, ISEF), and e) using formative assessment tools for continuous improvement.

Curious by Design: Innovation Through Design Thinking Harrison/Tyler

Christopher Freeman, Virginia Beach City Public Schools MS-HS

General Science

Can an emphasis on design thinking in the classroom help students think like scientists? Engage, explore, design and re-envision your classroom to create scientific minded students, foster student engagement and innovation. Emphasis will be placed on the process and how to get started with design thinking in your classroom. Examples and implementation strategies will be shared.

Data Analysis for Students with MY NASA Data Crystal Ballroom D

Elizabeth Joyner, NASA Langley Research Center; Mary Anna,Garifo, Virginia Tech MS-HS,

Earth/Space Science

Teachers and curriculum developers are encouraged to join MY NASA Data to learn how we can help students visualize Earth System data using free and easy-to-use tools for data analysis. We will analyze microsets, as well as explore data-driven lesson plans and visualization resources to help you uncover science standards. Attendees are asked to bring your WIFI-enabled laptop computer to the session for maximum participation. (not-for-profit exhibitor presentation)

Google's G-Suite as a Teaching Tool Buck Mtn. B

Tony Wayne, Albemarle High School MS-COL

General Science

You will learn how Google's G Suite can be used to teach with example lessons and some interactive activities. Take hundreds of student-generated research questions and interactively widdle them down to under twenty for research purposes. Experience how to use Google as a tool collector, Ranking Tasks, ConcepTests, and much more. (Participants will have access to all files used in the session.)

Chicken Decomposition Study: Forensics, Ecology, Behavior Tinker Mtn.

Anthony (Bud) Bertino, National Geographic Learning/Cengage; Patricia Nolan Bertino, National Geographic Learning/Cengage HS

Biology/Life Science

Fascinating, inexpensive, easy activity guaranteed to capture student interest. Observe insect succession, animal behavior, symbiotic relationships, development, adaptation, chemical and physical decomposition, injury sites and estimate post-mortem interval. Handouts. (commercial exhibitor presentation)

Gene Expression Wilson

Linda Culpepper, Lab-Aids HS

Biology/Life Science

Students often have trouble conceptualizing how selective gene expression works. In this workshop, participants will use manipulatives to teach this concept and explain how it is connected to genetic engineering. Innovative activities are selected from the new Science and Global Issues; Biology program from SEPUP and Lab-Aids. Activities focus on ways to integrate selective gene expression as a relevant and engaging sustainability issue. (commercial exhibitor presentation)

Particle Physics Virtual Reality Project at Virginia Tech Crystal Ballroom A

George Glasson, Virginia Tech; Samantha Spytek,Virginia Tech; Christopher Dobson,Virginia Tech HS-COL

Physics/Physical Science

In this collaborative project between the Department of Physics, the School of Education, and the Institute for Creativity, Arts, and Technology at Virginia Tech, teachers will be able investigate high energy particle physics and particle collisions in a virtual reality environment. Lessons will be shared in which students learn about particle detectors and conservation of energy in a relativistic environment.

Night with the Exhibitors and Meet Your Regional Director **Thursday, 7:00 p.m. - 9:00 p.m.**

Session 2 • Friday • 9:35 - 10:25 am

STEM Majors in Natural Resources Bent Mtn.

John Gray Williams, Virginia Tech HS-COL

General Science

Natural resources rarely come to mind when students hear the term STEM. But when you stop and think, virtually all products we know and love, from the most basic to the most innovative, use materials that can ultimately be tied back to a natural resource. Come learn about the "other" STEM majors at Virginia Tech and how you can connect students interested in biology, chemistry, physics, technology, and engineering to career options in the environment, sustainability, and conservation. (not-for-profit exhibitor presentation)

Integrating iPad® with Vernier Technology Crystal Ballroom E

Jackie Bonneau, Vernier Software & Technology; Patty Rourke,Vernier Software & Technology ALL GRADES

General Science

Participate in fun and engaging experiments that have you compare grip strengths, investigate pressure and volume relationships, and match position graphs, all using Vernier digital tools with iPads. See how sensor-based experiments teach students about data collection and analysis-practices that promote science inquiry, improve science literacy, and boost test scores. (commercial exhibitor presentation)

Exclusively for Pre-Service Teachers Roanoke Ballroom AB

Suzanne Donnelly, Longwood University/VAST; Elizabeth Edmondson,Virginia Commonwealth University; Erin Peters,George Mason University ALL GRADES

General Science

Calling all pre-service teachers! As part of its mission, learn how VAST can help you while completing your licensure program and throughout your science teaching career. Local and statewide opportunities await those who are committed to improving Science Education. Come learn how VAST can launch you into your career as a science teacher and score some goody bags and door prizes. Your advisors are invited to this session, too!

Chesapeake Bay Foundations Education Programs Crystal Ballroom C

Cindy Duncan, Chesapeake Bay Foundation ALL GRADES

Environmental Science

Join us on an adventure into field-based professional learning within the natural and social systems of the Chesapeake! In this session, we'll follow groups of teachers, and school leaders who spent part of the summer exploring "trans-disciplinary" approaches to environmental literacy in the context of the Chesapeake Bay watershed. We'll see examples of how these educators planned to integrate issues investigations and civic action into their own curricular programs. (not-for-profit exhibitor presentation)

Session 3 • Friday • 1:10 - 2:00 pm

Science Notebooks and Writing in the Primary Classroom Crystal Ballroom B

Lauren Hanahan, Hartwood Elementary School/School Specialty Science; Roxane Dupuis, School Specialty ELEM

General Science

A scientist's notebook is a personal representation of experiences, observations, thoughts, and questions. Students in the primary grades can begin to use science notebooks to represent their experiences and reinforce vocabulary. We will use hands-on activities from FOSS to model science notebook entries. We will be sharing samples of student science notebooks and strategies for class notebooks, developing scientific diagrams, and incorporating writing. Materials will be provided! (commercial exhibitor presentation)

Using PASCO Wireless Sensors to Provide Digital Measurements Crystal Ballroom E

Shaye Robinson, Bassett Elementary School/PASCO ELEM

General Science

What would happen if more children used student-collected data they gathered as they tracked environmental changes throughout their own city? PASCO scientific wireless sensors provide engaging digital measurement tools that turn data into graphs and charts for instantaneous analysis. Explore the impact pH and temperature have on a variety of ecosystems while your students put their predictions to the test. (commercial exhibitor presentation)

Elementary Level Observation Skills and Activities Jefferson Boardroom

Scott Watson, Liberty University ELEM

General Science

This presentation will begin with discussion of observation as the most basic of the science process skills. Observation may be defined as "information gathered through the senses". After the introduction, the presentation will shift to examples of science activities using observation skills that are appropriate for the elementary level.

Hook, Line, and Thinker! Crystal Ballroom A

Thomas Fitzpatrick, Roanoke City Public Schools; Angelo Bonilla, Breckinridge Middle School ELEM-MS

Physics/Physical Science

How to hook your kids on science, reel them in, and make them thinkers! We will present a wide variety of physics and chemistry demonstrations that will help you engage your students, create memorable experiences for them, and help them understand some relatively abstract concepts covered in the fifth grade and physical science SOL. As the rigor of assessments increases, use these demos to make your students THINK. From really simple to more elaborate, you will take home ideas you can use.

Team Building though Wind, Sea, and Robots! Buck Mtn. A

Theresa Guthrie, Tabb Middle School; Tracy Buckley, Tabb Middle School; Carol Bauer, Grafton Bethel Elementary School ELEM-MS

Engineering

Learn how to create competitive teams by using the engineering design process to facilitate collaborative and cooperative learning while promoting a growth mindset. Our focus is to encourage and guide teachers to get started with in-school and out-of-school projects. KidWind, SeaPerch ROV, and FIRST Lego League will be highlighted.

Technology and Science Buck Mtn. B

Eric Hallal, Tussing Elementary School ELEM-MS

General Science

In this session, attendees will learn how to incorporate various technology based programs into their science classroom. Attendees will learn about programs that are tied to the National Science Standards and the Virginia Standards of Learning. Attendees will leave with materials to support their classroom instruction immediately. Some examples that will be discussed include plickers, nearpod, the use of a Google based classroom, and how to incorporate QR codes.

Making the Ocean: an Immersive Experience for Fifth Graders Madison

Eric Ruppert, Eastern Elementary/Middle School; Phyllis Newbill, Virginia Tech; Christina Martin, Giles County Public Schools ELEM-MS

Earth/Space Science

Fifth graders in Mr. Ruppert's class have built an ocean for the past three years. The project uses a 55-foot section of the hallway so that the whole school can enjoy it. Students learn the design process and use lots of upcycled junk to construct their model of the ocean, which includes coral reefs, kelp forests, shorelines, environmental hazards, wildlife, and other ocean features. With help from the STEM Teacher, students used a Makey Makey to add audio explanations to the model.

Integrating Science in the University Classroom Bent Mtn.

Nora Dragovic, Virginia Tech Academy of Integrated Science; Charlotte Parks, Virginia Tech; Gary Long,Virginia Tech MS-COL

General Science

Virginia Tech's Integrated Science Curriculum (ISC) is a 30 credit, 2-year course sequence that integrates chemistry, physics, biology and calculus. ISC employs a collaborative, active-learning style environment emphasizing teamwork, independent thought, and creativity. We will present the strengths and challenges of the seven-year-old ISC program. Building from what we have learned we will explore how the ISC approach can be implemented at the high school level. (not-for-profit exhibitor presentation)

DNA Ahead Board Game: The Exciting Way to Teach about DNA! Wilson

Kathy Frame, Papillon Education Services LLC MS-COL

Biology/Life Science

Engage students in this active, fun-filled board game where they use critical thinking skills and develop life-skill strategies while learning about DNA science's history, scientists, discoveries, ethical issues, species interrelationships, predisposition to disease, underrepresentation in science, and much more! Easily integrates into existing curriculum., Each participant receives training, a FREE game and the information on how to become a DNA Ahead teacher-leader. Limit: 25 participants.

Dynamic Chemical Demonstrations from Flinn Scientific Washington Lecture Hall

Jillian Sadler, Flinn Scientific, Inc. MS-COL

Chemistry

Seeing is believing! Flinn Scientific presents a variety of exciting and easy to perform chemistry and physical science demonstrations! Come see Flinn's new demonstrations and some of your old Favorites — all guaranteed to make your science classroom come alive! Handouts will be provided for all attendees. (commercial exhibitor presentation)

Digital Badging: A Comprehensive Science Portfolio Mill Mtn.

Kianga Thomas, Norfolk State University; Arthur Bowman, Norfolk State University MS-COL

General Science

This session will focus on using Digital Badges as a means to create electronic portfolios and enhance autonomy for students in science classrooms. Participants will be instructed on how to create templates for badges and use them to ensure students fully grasp science concepts. In return, participants may use Digital Badges to collect relevant work from their respective students for the purpose of evaluation and understanding.

Forensic Science - Glass Analysis Tinker Mtn.

Anthony (Bud) Bertino, National Geographic Learning/Cengage; Patricia Nolan Bertino, National Geographic Learning/Cengage HS

General Science

Linking a victim or a suspect to a crime scene involves the study of trace evidence. Join us while we examine the physics of glass analysis including refractive index, density and fracture pattern analysis. (commercial exhibitor presentation)

Next Year's PDI: DoubleTree by Hilton Hotel, Williamsburg, Nov. 15 - 17, 2018
Theme: ***Diversify and Strengthen Science for All***

Session 3 • Friday • 1:10 - 2:00 pm

Enhancing Spatial & Scientific Thinking Using GIS Technology Crystal Ballroom C

Stephen Burton, Loudoun County Public Schools; Michael Wagner, Loudoun County Public Schools; Pat Herr, Loudoun County Public Schools

General Science ALL GRADES

This hands-on workshop will introduce teachers to the how and why of using GIS technology as a tool in their classroom. GIS technology provides a way for students to easily access and analyze spatial data. Participants will experience a few of the examples of how we have incorporated GIS into lessons in our K-12 classrooms.

Use Storyline to Teach History of Science Integrated Lessons Brush Mtn.

Mollie Deuel,University of Virginia; Lauren Tabor, University of Virginia; Ryan Maloney, University of Virginia; Frackson Mumba, University of Virginia ALL GRADES

General Science

Integrating history of science (HS) in science lessons excites students and enhances their understanding of content knowledge, evolution of science disciplines, and the nature of science. At UVa., we have developed several history of science integrated science activities using the storyline approach. Teachers will learn how to write HS integrated science activities using a Storyline template we have developed. Teachers will receive a Storyline approach template, and example HS storyline activities.

Preparing Your School for a Significant Weather Event Harrison/Tyler

Phil Hysell, NOAA/National Weather Service ALL GRADES

Environmental Science

The National Weather Service in Blacksburg will discuss how you can improve the readiness, responsiveness and resilience to extreme weather events for your school. By knowing your weather risk, you can help the National Weather Service "Build a Weather-Ready Nation". (not-for-profit exhibitor presentation)

Problem-Based Learning Templates and Activities for K-12 Monroe

Margaret Lambert, University of Virginia; Taylor Avery, University of Virginia; Allyson Grasso,University of Virginia; Laura Ochs, University of Virginia ALL GRADES

General Science

Problem-Based Learning (PBL) increase students' science content knowledge, scientific inquiry skills and attitude toward science. We will present the main characteristics of PBL and demonstrate how to develop PBL activities for diverse classrooms using the PBL template. Participants will learn how to write PBL units, activities and assessments for their classrooms. Participants will receive PBL template, and example PBL units we have developed and tested.

NASA Engineering Design Challenges: Content vs Context Crystal Ballroom D

Rosemary Smith, NASA Langley Research Center; Marile Colon Robles, NASA Langley Research Center ALL GRADES

Earth/Space Science

How do engineers solve problems? How do we teach students to think like an engineer, scientist, researcher, or mathematician? Are we equipping them with the right tools to succeed in the 21st century? This session will provide you the tools necessary to prepare our young problem solvers to succeed. You will be immersed in the NASA context while transforming your mind to think much like the innovators of tomorrow. Join NASA as we embark on a Journey to Mars!

Session 4 • Friday • 2:15 - 3:05 pm

Using Critical Competitors in Primary Science Instruction Crystal Ballroom B

Lauren Hanahan, Hartwood Elementary School/School Specialty Science; Roxane, Dupuis, School Specialty ELEM

General Science

Current research suggests that comparative thinking strategies are the most effective way to improve student learning. By presenting “critical competitors” in the science classroom, students' - observation skills and ability to highlight crucial similarities and differences deepen their understanding of science concepts. Come explore hands-on activities from the FOSS program that demonstrate opportunities to implement critical competitors in every science lesson. Materials will be provided. (commercial exhibitor presentation)

VDOE Update for Elementary Teachers Washington Lecture Hall

Anne Petersen,Virginia Department of Education ELEM

General Science

This session is designed to introduce the 2017 Standards of Learning for Teachers with an emphasis on the vertical alignment of content, skills, and science processes. In addition, information will be provided to support upcoming initiatives through the Virginia Department of Education including the use of a cross curricular approach in planning and instruction in elementary science.

Skulls Telling Stories Mill Mtn.

Shelby Snowden, James Madison University; Kerry Cresawn, James Madison University ELEM

Biology/Life Science

"Skulls Telling Stories" is an inquiry-based, SOL-aligned lesson for students grades 3-5. This lesson teaches students about animal adaptations for eating, hearing, smelling, and vision by having them examine features of skulls. Students apply knowledge in a hands-on, creative way by dissecting owl pellets and creating the skull of an animal they design. Teachers will learn how to incorporate this lesson into their own instruction to teach students about adaptations in a new and exciting way.

Uncovering the past - Discovering the Future Madison

Jimmy Johnson, Elmont Elementary School ELEM-MS

General Science

For the past 5 years fifth graders at Elmont Elementary in Hanover County have begun their year observing, classifying, measuring, and inferring as they have excavated a simulated school-yard archaeology site. In this session you will see how this has been implemented at Elmont and get ideas and resources for taking archaeology back to your school as a means of scientific inquiry.

PASCO Sensors to Study of Chesapeake Bay Watershed Crystal Ballroom E

Sabrina Burbanck, Spratley Gifted Center/PASCO MS

Environmental Science

Students love field experiments as they are fun and meaningful. PASCO sensors are used in our study of the Chesapeake Bay watershed measuring, pH, salinity, CO2, DO and temperature. The PASCO sensors are easy to set up and use making it easy for students to focus on the season. They make personal connections by studying pollutants and population increases near our watershed that result in lower DO readings. This will help them consider their choices that affect the bay. (commercial exhibitor presentation)

Engaging Students through Experimentation Jefferson Boardroom

Paula Leach, Longwood University; Virginia Lewis, Longwood University MS

General Science

Looking for ways to get your students excited about graphs and statistics? Student designed experiments are an effective way to get students interested in representing, analyzing, and interpreting data. In this session we will generate our own data and consider how different graphical representations help us display different aspects of the data and improve students' interpretation of the data.

Engaging Demos, Visuals, and Hands-On Science Harrison/Tyler

Sheryl McLaughlin, Hampton City Schools; Kimberly Riggs-Poole, Jones Middle School MS

Physical Science/Life Science

During this interactive presentation attendees will learn to make science content engaging and memorable with fun non-linguistic activities, without spending too much class time or teacher preparation. Presenters will demonstrate several cool demonstrations, visualizations, and hand movements that can be used in the classroom to teach physical and life science concepts. Attendees will complete several activities, including chemical reactions and extraction of DNA.

Biology Activity Learn & Share-a-Thon Wilson

Myron Blosser, Harrisonburg High School Governor's STEM Academy MS-HS

Biology/Life Science

Need a new, exciting Biology lesson, lab, demo, or instructional strategy? Middle and high school teachers will share ideas, labs and activities that work. Come prepared to walk away with exciting new ideas for original student research, teaching an abstract content strand and ways to keep your students exploring and doing science in the classroom. Handouts, lab sheets and many materials available.

Smorgasbord of Physics Activities and Demo Crystal Ballroom A

Tony Wayne, Albemarle High School MS-HS

Physics/Physical Science

Come visit physics demonstrations and labs at various tables around the room. Engage in hands-on activities while collecting resources to use in your own classroom.

DIY Remote Sensing to Investigate Climate Change

Daniel Borick, Portsmouth Public Schools; Daniel Lewandowski,Portsmouth Public Schools HS

Earth/Space Science

Cancelled

The State Council for Higher Education in Virginia (SCHEV) sponsored project centered on the development of a low cost launch vehicle (8 - 10 ft. Delta Kites), stabilized payload platform (known as an Aeropod), hacked low-cost digital cameras, and data logging modules. Participants learned digital image acquisition (using visible and near IR wavelength cameras) and data acquisition with Kestrel instruments.

Nat Geo: Bringing the World into the Class with Technology Tinker Mtn.

Stacey Fields, National Geographic Learning/Cengage HS

General Science

This session will focus on how to create relevance for students through National Geographic Learning's Science programs and digital resources. By walking through one of our MindTap classes, we will show teachers how to use our engaging assignments, visuals, and self graded assignments to bring the world into the classroom. Participants will work on their own MindTap courses to explore chosen subject areas. Join us and see how Environmental Science (or subjects of choice) come to life. (commercial exhibitor presentation)

Next Year's PDI: DoubleTree by Hilton Hotel
Williamsburg, Nov. 15 - 17, 2018
Theme: *Diversify and Strengthen Science for All*

Session 4 • Friday • 2:15 - 3:05 pm

Spectrophotometry for AP Chemistry and AP Biology Monroe

Babette Shoemaker, Ocean Lakes High School, HS-COL

Chemistry/Biology

This session is primarily designed to help AP Chemistry teachers who are encouraged to include investigations with the spectrophotometer and AP Biology teachers who are encouraged to include investigations into chlorophyll. This session will introduce spectroscopy, and common uses of spectroscopy. The participants will gain hands-on experience by completing the Vernier lab "Determining the Concentration of a Solution: Beer's Law" using the Vernier Spectro-Vis. (activities make use of commercial products)

Bringing NASA's Hidden Figures into Your Classroom Crystal Ballroom D

Marile Colon Robles, NASA Langley Research Center; Rosemary Smith, AERO Institute/NASA Langley Research Center ALL GRADES

General Science

The film "Hidden Figures," based on the book by Margot Lee Shetterly, focuses on the stories of Katherine Johnson, Mary Jackson, and Dorothy Vaughan, African-American women who were essential to the success of early spaceflight. This session will focus on NASA K-12 classroom activities perfect for English, Social Studies/History, Science, Math, and Engineering. Additional resources and recommendations will be included for activities that tie directly to the work portrayed in the movie. (not-for-profit exhibitor presentation)

Using Computer Simulations to Support Conceptual Change Buck Mtn. A

Amanda Gonczi, Michigan Technological University; Jennifer Maeng, University of Virginia ALL GRADES

General Science

Students hold many misconceptions in science. Computer simulations can support conceptual change. In this session participants will learn how to teach for conceptual change using computer simulations. We will model a lesson using strategies that support conceptual change, help participants identify a prevalent misconception among their students and find simulations they could use in their own science instruction. Attendees should bring a laptop with them.

UVa Engineering Design Teacher Guide Manuals & Activities Brush Mtn.

Sarah McIntosh; Mathew Rice; Cassandra Jansch; and Frackson Mumba,University of Virginia ALL GRADES

Engineering

Using engineering design to teach science can be a challenging task for many teachers. At UVa we have developed teacher guide manuals to help teachers develop engineering design activities that are aligned with science SOLs and NGSS. We will present teacher guide manuals, and example activities that address biology, chemistry, and physics SOLs and engineering design. Participants will receive teacher guide manuals and example activities.

Project-Based Science Instruction in K-12 Classrooms Bent Mtn.

Megan Oliva, Yohanis Kassa, Brittany Garvey, and Alexis Rutt, University of Virginia ALL GRADES

General Science

Project-based science instruction (PBSI) engages students in experiential learning. How different is PBSI from problem-based learning? Participants will learn about the main characteristics of PBSI. At UVa, we have developed PSBI activities for different grade levels. We will demonstrate how to develop PBSI activities using the templates we have developed. Participants will receive example PBSI units, activities, and assessments on several topics for middle and high school science classrooms.

What's Your Superpower? GBL in the Science Classroom Crystal Ballroom C

Caitlin Unterman, Bedford County Public Schools/Legends of Learning; Sean Reidy, Legends of Learning ALL GRADES

Earth/Space Science

Have you ever wanted to manipulate time? Get extra super power strength?! Now you can with Legends of Learning game-based instruction! Come see how you can integrate a new and fun game-based learning platform into your science curriculum to give your students the superpower of knowledge! Learn about the Legends of Learning teacher platform, assessment analytics platform, and how you can create gaming playlists to monitor student strengths and weaknesses! (commercial exhibitor presentation)

Session 5 • Friday • 3:20 - 4:10 pm

Physics is Elementary with VIP Crystal Ballroom A

Jeff Steele, Liberty High School ELEM

Physics/Physical Science

The Virginia Instructors of Physics has polled elementary teachers and the VA DoE to ask "What areas of physical science can we help with?" Come find the answer in the forms of lessons you can put into action immediately that will have your students experiencing and learning physical science through inquiry. You will find answers to your questions, ideas to implement, and make-and-take experiments to implement while you enjoy experiencing some inquiry learning of your own.

The Science in Me Tinker Mtn.

Tekita Blackwell,"Roots for A-STEM", LLC ELEM-MS

General Science

This session will highlight the necessity for people of color to be represented in the Arts and STEM curriculum, as a means of impacting the academic performance and career choices of African American and Hispanic students. Hear first-hand testimonials from Roots for A-STEM, LLC - an organization devoted to exposing African American and Hispanic children to pioneers in the Arts and STEM.

Implementing GLOBE Across Grade Levels in a K-8 Program Harrison/Tyler

Angela Rizzi, Our Lady of Mount Carmel School ELEM-MS

Environmental Science

Explore how to build knowledge across grade levels with ongoing participation in GLOBE. Students will demonstrate new skills each year as they progress from observation to maintaining accurate notebooks for data collection, data entry and analysis and individual projects. Ultimately, teach students to develop and test their own hypotheses using GLOBE. Benefits and practical tips will be discussed.

Activities and Simulations for Heredity and Adaptations Crystal Ballroom B

Sarah McGlothlin, Narrows Middle School/School Specialty Science; Roxane Dupuis, School Specialty MS

Biology/Life Science

Explore activities, simulations, and "sense-making" strategies from the new FOSS Heredity and Adaptations module for middle school life science. Work with a fictitious creature, the larkey, and engage in the Walking Stick simulation. Resources and temporary access to FOSSWEB will be provided. Bring a device or laptop, so you can play along! (commercial exhibitor presentation)

Conclusions Based on Evidence Jefferson Boardroom

Rebecca Musso, Stafford County Public Schools MS

General Science

Gain strategies and techniques to help guide students from evidence to conclusions, and summarize their results. Middle school students often struggle with lab reports or summarizing their investigations. Attendees will leave with ready-made resources to implement immediately.

Framing Secondary Science in Project Based Learning Madison

Meredith Kier, College of William and Mary MS-HS

General Science

Preservice secondary science teachers (PSTs) will present plans for how students can learn through projects in traditional science classrooms across each discipline. They will present how projects can be supported by math and literacy and driven by the ideas of their students (in high needs schools) and the context of the community. PSTs will present tools for personalizing students learning.

Grants and Other Resources for the Science Classroom Bent Mtn.

Stephen Leaman, James Madison University; Shelby Snowden, James Madison University, Joseph LoPreto, James Madison University; Matthew Kohler, James Madison University MS-HS

General Science

Pre-service teachers Lucas Cherry, Victoria Gordon, Connor Keelan, Matthew Kohler, Joseph LoPreto, Jessica MacIntosh, Zachary Marinelli, Shelby Snowden, and Logan Truslow will share their experiences with grant writing and provide a listing of viable national and state grant opportunities. Learn how to get rewards for your grant writing and solicitation efforts to enhance your STEM program. Find funding for research, field trip, technology, and lab safety experiences for your science students.

VDOE Science Update for Secondary Teachers Washington Lecture Hall

Anne Petersen, Virginia Department of Education MS-HS

General Science

This session is designed to introduce the 2017 Standards of Learning for Teachers with an emphasis on the vertical alignment of content, skills, and science processes. In addition, information will be provided to support upcoming initiatives through the Virginia Department of Education.

Using PASCO Sensors that Align with VA Biology SOL's Crystal Ballroom E

Kristen Massey, Kecoughtan HighSchool/PASCO HS

Biology/Life Science

Highlighting 3 different lab activities using PASCO's sensors that align with Virginia's SOL. Activity 1 will highlight pH and how to set up a lab to compare pH of living systems to non-living systems. Activity 2 will use the EcoZone system to model and understand interactions within different ecosystems. Activity 3 will highlight the wireless temperature sensor to measure the reaction rate of enzymes. (commercial exhibitor presentation)

More Must Have AP & IB Chemistry Labs Monroe

Paula Nottingham, Stonewall Jackson High School HS-COL

Chemistry

This is a follow-up to last year's session. This session will provide more AP or IB labs that fit the required criteria 9 and others that are simply awesome labs that your students will enjoy.) Get your students ready for the AP and IB tests with these must-have, must-do labs.

"Share and Compare" with NASA GLOBE Clouds Protocol Crystal Ballroom D

Marile Colon Robles, NASA Langley Research Center ALL GRADES

Earth/Space Science

The NASA S'COOL Project is joining forces with the GLOBE Cloud Protocol to help you "do" science in and outside the classroom. The session will provide an overview of how to share your ground/cloud observation with NASA, compare results with NASA satellite data and share with the worldwide GLOBE community. We will review learning activities, easy-to-use mobile apps, and community opportunities. Session participants will explore how to engage students on a local, global, and space-cial scale!

Session 5 • Friday • 3:20 - 4:10 pm

Science StoryWalks: Bridging the Community and the Classroom Mill Mtn.

Erika Hackworth, Woodrow Wilson Middle School ALL GRADES

General Science

Are you looking for a way to engage your students and the community at the same time? "A StoryWalk® is a fun, educational activity that places a children's story along a walking route in your community." This idea has been adapted to fit the classroom. Students will create their own science stories that will bridge the community and the classroom. Science StoryWalks will bring about creativity in your students and will encourage complex thinking.

Integrate History of Science in K-12 Using Recurrent Method Buck Mtn. B

Cassandra Jansch, University of Virginia; Megan Spalding, University of Virginia; Margaret Lambert, University of Virginia; Alexis Rutt, University of Virginia

General Science ALL GRADES

Have you ever used a recurrent teaching strategy? This session will demonstrate how to teach history of science integrated science lessons using the recurrent teaching strategy. Participants will have an opportunity to create their own history of science integrated activities using recurrent approach. We will share recurrent approach activities, assessments, and templates.

Microfossils: Small Sources Tell Big Stories Crystal Ballroom C

Chris Kaznosky, Central High School; Steve Leslie, James Madison University ALL GRADES

Earth/Space Science

Macrofossils such as dinosaur bones grab the glory, but microfossils tell much of the story. In this session, you will learn how to identify conodont microfossils. Microfossils are indicators of paleoclimates and climate change, paleoenvironments, mass extinctions, and natural resource presence in Virginia and beyond. Take-home materials and student lessons, as well as instruction on digital mapping technology will be provided.

Using Case-Based Learning in K-12 Science Classrooms Buck Mtn. A

Tabor Lauren, University of Virginia; Aine Gallagher, University of Virginia; Deuel Mollie, University of Virginia; Frackson Mumba, University of Virginia

General Science ALL GRADES

What is Case-Based Learning (CBL)? How is CBL used to engage students in science activities? We will demonstrate CBL science activities we have developed and tested in schools. Our CBL activities address SOLs and can be used across grade levels. Participants will learn how to develop CBL science activities for their classrooms. They will also learn how to differentiate science instruction using CBL approach. Participants will receive a CBL template and example CBL activities.

Using Target Labs in Science Teaching Brush Mtn.

Ryan Maloney, University of Virginia; Ayaan Alam, University of Virginia; Hefele Thomas, University of Virginia

General Science ALL GRADES

Both Target Labs and Inquiry activities increase students understanding of science and scientific inquiry skills. But what are Target Labs? What is the difference between an inquiry activity and Target Lab? How would you know which one you are using to engage students in your science classroom? Teachers will be engaged in Target labs and inquiry activities to help identify the differences and similarities between the two. Teachers will receive templates and example Target Labs.

Plant The STEM ...Pollinator Seedbombs in Space? Wilson

Kaleela Thompson, University of Florida/National Geographic/Cengage; Shirley Sypolt, Cooper Elementary School ALL GRADES

Biology/Life Science

Roll and Toss! Sprout a Garden that Blooms for Pollinators on Earth and Beyond Hands on Workshop to make pollinator seedbombs and discuss the possible scenarios of sending those seedbombs to space. Seedbomb dispersal has been used in places that are hard to physically access, and seed bombs are pretty much self sustainable requiring less maintenance from human intervention.

Session 6 • 4:25 - 5:15 pm

Perfect Partners: Fostering Inquiry with Literacy & Science Buck Mtn. B

Suzanne Kirk, Virginia Commonwealth University ELEM

General Science

Join teachers participating in VISTA at VCU's Elementary Literacy Integrated with Science (ELIS) as they share their experiences in developing and implementing Problem-Based Learning units. Engage in their lessons and learn from their experiences. The units presented will include a variety of topics from the VA K-5 Science SOLs and will integrate literacy with inquiry and hands-on science instruction. Sample lessons plans, as well as tips and pitfalls, and suggested booklists will be provided.

Praying For A Good Science Lesson? You Are in Good Hands Crystal Ballroom B

Ashley Ring, Fishburn Park Elementary School; Kit Richards, Fishburn Park Elementary School ELEM

General Science

What do you know about Praying Mantises? People of Ancient Egypt, Ancient Greece, and other ancient civilizations believe these unique insects possess supernatural powers. They can camouflage themselves to resemble fire and rotate their heads nearly 180 degrees. In this session, You will gain knowledge of the Mantis and a new found appreciation of the species. We will share a thematic unit and our own First Grade student's experiences. Attendees will come away with several make and takes.

Stimulating Simulations Supporting Student Success Madison

Jennifer Thomason, Jane H. Bryan Elementary School; Mallary Brown, Jane H. Bryan Elementary School ELEM

General Science

Do you want students that are engaged and their minds stimulated all while building on 21st century skills? Teachers can supplement and enhance instruction with powerful interactive visualizations and simulations of science and mathematical concepts. Students can manipulate key variables, generate and test hypotheses, and engage in extensive "what-if" experimentation. They can explore and utilize manipulatives to further build on concrete knowledge and move to the more abstract.

What Do You See? Using SEM Images to Unlock Curiosity Mill Mtn.

Cheryl Lindeman, Randolph College; Jasmine Fowler, Randolph College ELEM-MS

General Science

Creating lessons using scanning electron microscope images can open young minds to ask critical questions about living and nonliving things. We will share our experiences working with children to identify the images that sparked their curiosity. The 5E instructional model will be used to show how we designed lessons using a student generated SEM gallery. Sample lessons will be reviewed and a link to the electronic archive will be shared.

Linking Science & Literacy with Problem Based Learning Crystal Ballroom D

Cathy McAuley, Woodbridge Middle School; Charlotte Trost, Coles Elementary School; Jessica Smith, Coles Elementary School ELEM-MS

General Science

How to plan, structure, and organize classrooms using problem based learning. Students will become motivated by solving relevant problems based on curriculum needs through engineering and literacy. How to transcend across grade levels 4-6 and curriculum standards.

Reducing Your School's Carbon Footprint and Enoying It Harrison/Tyler

Sandra Bennett, Culpeper County High School; Kimberlee Whitehead, Culpeper County Public Schools MS-HS

Environmental Science

Results of a NOAA Climate Stewards Grant and continuing activities instituted during the grant will be presented. This has resulted in several tons of carbon being recycled by weekly collections of paper, plastic and aluminum from the school campus. Additionally students are given the opportunity to recycle paper and plastic through paper making , craft and garden activities and the "use the other side" campaign. This has given our students a real hands experience to see that one person can make a difference.

Student Ownership of Learning in the Secondary Classroom Washington Lecture Hall

Anne Petersen, Virginia Department of Education MS-HS

General Science

With the balanced assessment approach in K-12 education comes an expectation that students can apply science content, skills, and processes in completing original tasks. In order to prepare for these types of tasks, there must be a paradigm shift in instruction. Instruction that includes higher level of student engagement and student ownership in learning better prepares them to apply content and skills to novel situations.

Exploring Virginia's Forest Cover Types Wilson

Ellen Powell, Virginia Dept. of Forestry MS-HS

Biology/Life Science

Almost 2/3 of Virginia is forested, and forest types differ across the state's geographic regions. Studying forest types helps students understand the complexity of natural ecosystems and the challenges to maintaining them. Come and explore a new series of forest-related lessons for middle and high school students, incorporating small group work, field data collection, computer applications, and discussion.

Teaching History of Science Activities Using Argumentation Brush Mtn.

Taylor Avery, University of Virginia; Thomas Hefele, University of Virginia; Yohanis Kassa, University of Virginia, Megan Oliva, University of Virginia MS-COL

General Science

Argumentation teaching strategy is one of the effective ways for increasing students' content knowledge, and communication skills. We use argumentation to teach history of science (HS) integrated science activities in middle and high schools. We will demonstrate how to teach HS integrated science activities using argumentation teaching strategy. Participants will learn how to write HS integrated science activities using the guidelines we have developed. We will also share example activities.

VESTA Reboot: Virginia Earth Science Teachers Association Crystal Ballroom C

Russell Kohrs, VAST Earth Science Committee MS-COL

Earth/Space Science

Come network with other Earth Science teachers! Some years ago, teachers banded together to form VESTA, the Virginia Earth Science Teachers' Association. This association exists to serve you and wishes to grow and provide outreach activities, networking opportunities, advocacy, field trips, and other exciting things for its members. Come and join us for a time of fellowship, brainstorming, and re-organization.

Next Year's PDI: DoubleTree by Hilton Hotel, Williamsburg, Nov. 15 - 17, 2018
Theme: *Diversify and Strengthen Science for All*

Are They Ready? The Importance of Technical Writing Bent Mtn.

Rachel White, Virginia Beach City Public Schools; Katie Liakos, Princess Anne High School; Joyce Corriere, Space Grant Consortium MS-COL

General Science

Preparing next generation of successful scientists, researchers and engineers through technical writing. The PD will focus on the importance and demand of scientific writing for upper level science courses as well as in STEM careers through three different disciplines; physics, biology and environmental science. This session will provide educators with strategies to implement technical writing into their classrooms as early as fifth grade.

VIP Share-a-thon Session Crystal Ballroom A

Timothy Couillard, Virginia Instructors of Physics HS

Physics/Physical Science

Join the Virginia Instructors of Physics for their fall idea share session. Hear the latest ideas from physics teachers from around the state. We look forward to seeing old friends and new faces. Contact **timothy_couillard@ccpsnet.net** if you can bring something to share. The Virginia Instructors of Physics is a network of physics teachers dedicated to improving their craft and sharing resources.

Bullseye! Hitting the Target with Standards Based Chemistry Monroe

Isabella Yearwood, Prince William County Schools HS

Chemistry

Standards based grading usually gets a bad reputation for "being more work". However, it is not only purposeful but it is also doable! Quality over quantity, standards based grading creates a quality system that allows for constant growth in the classroom. Well implemented, it allows students to be accountable for their education. Learn how to break chemistry units into manageable learning targets and create a grading system that is easy and efficient.

VAST Colleges and Universities Share Session Tinker Mtn.

Suzanne Donnelly, Longwood University; Elizabeth Edmondson, Virginia Commonwealth University; Erin Peters, George Mason University HS-COL

General Science

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

The Perks & Pitfalls of Starting a Makerspace Crystal Ballroom E

Allison Couillard, Robious Middle School; Sandra Guyer, Robious Middle School ALL GRADES

Engineering

Makerspaces are becoming increasingly popular, and with good reason! Learn how to start one in your school by discovering who makers are, how they think, and what they're making. This presentation will cover questions to ask as you navigate the road to starting a Makerspace including where to find funding, what you should buy, which resources are available, and how you can use the space to promote the magic of making for students and staff.

Celebrate NASA Langley Research Center's (LaRC) Centennial at the 2017 VAST PDI!

This once-in-a-lifetime exhibit experience lets visitors ride along to discover NASA LaRC's past 100 years of historic accomplishments related to aeronautics, science and space research and exploration. Showcasing a variety of NASA artifacts, audiovisual technology and unique 3D imagery, visitors are immersed in Langley's early beginnings as the first civilian aeronautics lab to becoming the birthplace of the National Aeronautics and Space Administration. Visitors also have an opportunity to go with NASA as we take the next giant leaps - to make airplanes fly faster, cleaner and quieter, to improve our understanding of our home planet, Earth, and to have humans journey to Mars. From their experience, visitors will come away excited about Langley's storied legacy and ready to be a part of its soaring future.

Free admission with your PDI Name Tag

Visit NASA's Centennial Experience Exhibit at VAST:
Thursday, November 16th, 2017 7:00 p.m. - 9:00 p.m.
Friday, November 17th, 2017 7:30 a.m. - 10:30 a.m.
12:30 p.m. - 5:30 p.m.
Saturday, November 18th, 2017 7:30 a.m. - 11:30 a.m.

Elementary Extravaganza Roanoke Ballroom AB
Jaclyn Claytor, Virginia Association of Science Teachers ELEM
General Science
Join elementary professionals for an outstanding opportunity! Gather resources for use in your classroom immediately. Engage in hands-on activities & experiments, find strategies to excite and encourage your students, along with door prizes, and much more! (double session, 8:30am-10:25am)

Exploring the Scientific Research Process with GLOBE Crystal Ballroom D
Tina Harte, NASA Langley MS
Earth/Space Science
This session explores a learning module designed for middle school and after school audiences that provides the opportunity to conduct an atmosphere investigation while learning about the scientific research process. A series of learning activities guide students in developing a question, gathering and analyzing data and identify evidence to support their scientific argument. Participants will receive a copy of the module and learn how to become a GLOBE-certified teacher through eTraining. (not-for-profit exhibitor presentation)

Building Oral Academic English in the Science Classroom Jefferson Boardroom
Jillian Wendt,University of the District of Columbia; Mark Wilson, University of the District of Columbia; Jamine VanStory, University of the District of Columbia MS
General Science
In this session, presenters will define linguistic concepts related to oral proficiency and discuss the importance of these ideas in the science classroom, with a focus on teaching linguistically and culturally diverse students. Participants will engage in hands-on activities to learn approaches for developing the academic oral language of English learners in the science classroom and how to bridge speaking and listening skills into the traditional academic domains of reading and writing.

Better Ratings in the Review Process for VJAS Papers Crystal Ballroom A
Dorothy Doolittle, Christopher Newport University MS-HS
General Science
A reader for the student research papers for VJAS will discuss the rating scale for research papers and how ratings might be improved. Attention will be given to what information should be in each section of the research papers and how to improve the quality of the presentations. The session will provide insight for faculty on what readers consider in rating papers.

Using Hands On Activities to Grab Student Interest Crystal Ballroom B
Craig Doolittle, Dozier Middle School; Erin Watson, Dozier Middle School MS-HS
Physics/Physical Science
In this session, you will see presentations of many new and exciting student activities and teacher demonstrations to get your students excited about learning science. We will demo activities on Density, Nature of Science, Natural Selection, and using VR to explore the Universe. This will be a fast paced, high energy presentation full of ideas and activities that you will be able to take back to your classroom and do on Monday morning.

Engaging Inquiry: Pre-service Teachers Share Tested Lessons Crystal Ballroom C
Elizabeth Edmondson, Virginia Commonwealth University MS-HS
General Science
Do you want to wow your students? Do you need to inject some pizzazz into your instruction? Attend our session where secondary science preservice teachers will share inquiry-based, hands-on lessons in this interactive session. You will have an opportunity to see and participate in these classroom tested activities.

The STEM Behind Diabetes and Breast Cancer Crystal Ballroom E
Jeff Lukens, Texas Instruments MS-HS
Biology/Life Science
Finding causes, treatments and cures for diseases is "STEM on the front-lines". Without all four components of the STEM model firmly set in place, any serious medical research is destined to fail. Using interactive, virtual activities, participants will develop an understanding of the difference between a body that is functioning normally and one that has developed T1D or Breast Cancer. All discussion of human anatomy and physiology will be at a gentle introductory level. (commercial exhibitor presentation)

30 km or Bust! High Altitude Ballooning for Real Teachers Bent Mtn.
Norm Marshall, Franklin Military Academy MS-HS
General Science
High altitude ballooning is a growing hobby, but it is still relatively rare in secondary education. Perhaps you've never heard of it, perhaps it seems too expensive, or perhaps the technical details seem too daunting; but, you can single-handedly start a space program at your school. Come find out how to realistically tap into this immensely engaging inquiry- and problem-based activity.

Next Year's PDI: DoubleTree by Hilton Hotel, Williamsburg, Nov. 15 - 17, 2018
Theme: ***Diversify and Strengthen Science for All***

Making Math and Science Fun

Melinda Mericle, Christ the King Catholic School; Heather Mericle-Sherburne, Maury High School MS-HS

Math in Science

Cancelled

Tired of hearing the whines and grumbles from the students whenever you assign something dealing with math and/or graphing?? Come hear some innovative ways to make Math and Science fun and to stop the Whines and Grumbles (or at least lessen them). Hands-on, kinesthetic, edible, out of the box ways of approaching these topics. For grades 6-12. There will be give a-ways/take homes.

Effective Teacher Behaviors that Promote Robust Learning Brush Mtn.

Erich Sneller, Harrisonburg High School; Seth Shantz, Harrisonburg High School MS-HS

General Science

When we teachers are keenly aware of our behaviors with students and choose interactions to consistently promote student engagement, students will develop a sense of belonging and invest themselves in their education. In this session, we will discern what effective and ineffective teacher behaviors look like, how we might enhance our practice, and how these changes can rejuvenate our craft. Please join us to share your ideas and to encourage our collective growth as teachers.

Data on a Shoestring: Using Archival Data in the Classroom Harrison/Tyler

Russell Kohrs, Massanutten Regional Governor's School MS-COL

General Science

It is increasingly important for students to work with real data in the classroom, on projects, and for their own mentored research. Sometimes, however, data collection requires highly specialized equipment not available, normally, to teachers in most settings. Never fear! There are troves of fabulous usable data already out there, archived, on government websites, university pages, etc. that are free to use. Come explore, stretch, and learn to use data on a shoestring! Bring a laptop!

Developing STEMLabs for Middle and High School Buck Mtn. A

George Meadows, University of Mary Washington MS-COL

General Science

STEMLabs are spaces where students design, build, and test solutions to authentic problems. Solving these problems involves the direct hands-on application of principles and concepts learned in science and mathematics classes and make use of wide range of tools, from soldering irons to 3D printers. This session will discuss the development and use of STEMLabs in a number of middle and high schools in the Northern Neck region as well as Richmond City.

Meeting SOLs with an Engineering Challenge Mill Mtn.

Remy Pangle, James Madison University MS-COL

Engineering

Looking for a great way to get your students engaged? How about a competition? The KidWind Challenge is an engineering design competition and a great way for students to apply what they are learning in their classes. It is a truly STEM experience that has students building, designing, documenting, and demonstrating their knowledge. In this session, we will have a mini KidWind Challenge to introduce teachers to all aspects of the Challenge and even test their knowledge of wind energy! (not-for-profit exhibitor presentation)

More than Mere Cycles: Processes for Earth Evolution Washington Lecture Hall

Eric Pyle, James Madison University MS-COL

Earth/Space Science

The Earth's 4.6 billion year history is driven by processes of evolution of Earth that can also provide clues to the future of the Earth. The matter-energy cycles that define the Earth do not provide information about the timing and scale to understand how the Earth evolves over time. This session will examine Earth systems through a series of activities that demonstrate self-organizing, fractionating, and elaborating processes that defy the simple circular representation. (not-for-profit exhibitor presentation)

Chemistry Roundtable Discussion Monroe

Stephanie Harry, Kecoughtan High School HS-COL

Chemistry

Do you have an Chemistry lesson/experiment/idea that you would love to share with your fellow Chemistry teachers? Well join me at the Chemistry roundtable where we can share and learn from each other. If possible bring a lesson/experiment/idea to share. This is a great opportunity to collaborate and learn from each other.

Scientific Literacy Matters: Using Literature to Meet NGSS Tinker Mtn.

Clair Berube, Hampton University; Suzanne McKinney, Old Dominion University ALL GRADES

General Science

Science educators have worked at developing new standards, new approaches to science teaching, and new techniques aimed at engaging students in the practice of science. The use of literature is discussed as one method to augment the teaching of science. In the context of making a literature selection, a new conceptual approach is proposed that includes attention to meeting the NGSS while being responsive to the importance of 21st Century Skills.

Session 7 • Saturday • 8:30 am - 9:20 am

Dirty Hands Wash Over Every Environmental Project's Modality Wilson

Jim Disbrow, Millennium Project ALL GRADES

Environmental Science

Starting Sustainability in the nexus of Food, Energy, Environment, Water and Soil, we will grow a TLC hand-made biome's strategic goods analysis (across its Total Life Cycle). With hands-in-dirt projects, students will feel nexus impacts on each biome and its guild. Students can help build their communities gardens by growing starters (in window-hanging 2-liter chopped soda bottles) and then planting their biome in the ground.
Dirty Hands => Finding a Sense of Responsibility for "their" plant.

National Geographic Teacher Certification Madison

Becky Schnekser, Cape Henry Collegiate and National Geographic ALL GRADES

General Science

Do you believe in empowering students to think like explorers? In inspiring students to be global thinkers who can change the world? If so, you are invited to become a National Geographic Certified Teacher! We seek to inspire educators to teach students about the world in innovative and interdisciplinary ways. Come join the community of National Geographic Explorers, Educators, and Innovators! This session will provide you with Phase 1 of the certification process.

Session 8 • Saturday • 9:35 am - 10:25 am

Communicating through Science: Disciplinary Literacy Jefferson Boardroom

Annie Duguay, Center for Applied Linguistics; Jillian Wendt, University of the District of Columbia; William Willis,University of the District of Columbia; Jackson Quincy, University of the District of Columbia MS

General Science

In this session, presenters will identify the components of literacy and the importance of embedding literacy development and reading comprehension activities for linguistically and culturally diverse students in science lessons. Through hands-on activities, participants will learn approaches for designing writing scaffolds and teaching reading strategies to ensure that English learners have the literacy skills necessary to communicate across a wide variety of domains and genres in science.

The Virginia Energy Story Wilson

Kimberly Swan, The NEED Project MS

General Science

Specifically for 6th grade! Come learn about the new Energy in VA curriculum program designed to engage students in discovery related to energy in the Commonwealth! Activities cover the basic science of energy, energy sources, electricity generation, energy in Virginia — past & present, and energy efficiency & conservation, while allowing students to hone their science process skills and engage in STEM learning. You'll get to try out the activities, including our nuclear power plant simulation! (not-for-profit exhibitor presentation)

Hands On: Real World Lessons for Middle School Classrooms Buck Mtn. B

James Swart, The University of Tennessee; Jennifer Richards,The University of Tennessee; Mark Wenke,The University of Tennessee MS

Biology/Life Science

Integrating topics across disciplines develops higher-order thinking and encourages active student engagement. Incorporating hands-on, inquiry-based activities rooted in real-world applications allows students to see connection between what they learn in school and life outside the school walls. This workshop allows participants to engage with a ready-to-use curriculum that is aligned to Virginia content standards in science, math, social studies, and language arts. (not for profit exhibitor presentation)

Is it Ionic or Covalent? Monroe

Stephanie Harry, Kecoughtan High School MS-HS

Chemistry

Identifying compounds as ionic or covalent is essential in the chemistry classroom. This session will cover different videos, activities and experiment, used to teach students this skill. Presentation attendees will be given the chance to make their own simple portable conductivity meter.

Keeping It Real: Integrating Real-World Applications Brush Mtn.

Mark Levy, Roanoke Valley Governor's School MS-HS

General Science

In this session, we will explore ways to embed real-world applications in science instruction on a consistent basis, increasing interest and investment from your students. We will discuss sources for ideas, case study resources, and methods for deepening content knowledge. A framework for effectively and consistently integrating applications into lesson planning will also be presented.

Converting Seagrass Research into a Hands-on Lesson Plan Mill Mtn.

Kristen Sharpe, Chesapeake Bay National Estuarine Research Reserve in Virginia MS-HS

Biology/Life Science

Seagrass beds are an incredibly valuable habitat, so it is important to instill respect for this habitat while simultaneously exposing students to actual science research methods. Use this hands-on lesson to teach about seagrass through an interactive mock transect, which models actual scientific methods. Participants will analyze a simulated seagrass transect, monitoring techniques, and water quality data to solve the mystery of the decline and species change of seagrass in the Chesapeake Bay. (not-for-profit exhibitor presentation)

Safety in Secondary Science Lab - Case Study Bent Mtn.

Andrew Jackson, Harrisonburg City Public Schools MS-COL

General Science

In this session we will look at and discuss a series of case studies of accidents in secondary science labs and the legal outcomes. We will use these case studies to discuss how to correctly handle safety issues in the science lab.

Applying Good Observational Skills to Forensic Examination Tinker Mtn.

Anthony (Bud) Bertino, National Geographic Learning/Cengage; Patricia Nolan Bertino, National Geographic Learning/Cengage HS

General Science

Why are eyewitness accounts of crime so inaccurate? Examine strategies to sequence events & detect falsehoods. Using readily available videos, work with your students on improving their observational skills. Examine deceptive behaviors in speech and body language. What are the basic rules of questioning? How do micro-expressions aid the examiner? Handouts and a resource list will be provided. (commercial exhibitor presentation)

Drones in Citizen Science Madison

Paul Sarandria, Portsmouth Public Schools; Jennifer Garcell, Portsmouth Public Schools; Judith Cozart, Portsmouth Public Schools HS

Environmental Science

Come learn how you can incorporate the construction and use of autonomous unmanned vehicles (AUVs) in your science classes. Talk to university and public school teachers who are part of the NOAA-funded, Policy-Ready Citizen Science project. We will provide personalized feedback on how to bring the excitement of drones to your students.

Virtual Rocks Washington Lecture Hall

Callan Bentley, Northern Virginia Community College HS-COL

Earth/Space Science

"Virtual Rocks" come in many forms, accessible via a computer, tablet, or phone for the purposes of increasing access and improving opportunities for practice of identifying rocks and structures, and interpreting geologic histories. We will showcase ready-to-use teaching modules, games, & virtual field trips utilizing super-high-resolution GigaPan imagery and 3D models of rocks and outcrops of many varieties and origins. The modules may be utilized as in-class "labs" or as homework assignments.

Earth: From the International Space Station to the Classroom

Kristyn Damadeo, NASA Langley Research Center ALL GRADES

Earth/Space Science

Engage students in atmospheric science and engineering practices through real NASA science from an instrument attached to the International Space Station. Learn about ozone, aerosols, and how NASA takes instruments from an idea to a rocket launch!

Cancelled

Seat to Feet! Activate Student Learning in Your Classroom Crystal Ballroom C

Elizabeth Edmondson, Virginia Commonwealth University; Kim Dye, Hanover County Schools ALL GRADES

General Science

Come investigate how to get your students up and out of their seats to talk about important science ideas, to review content, and to provide you with important formative assessment information about their learning. This session will fill your toolbox with over 15 strategies to raise your students understanding to a deeper level.

Bring the Story of "Hidden Figures" to Your Classroom Crystal Ballroom B

Rudo Kashiri, Virginia Space Grant Consortium; Joyce Corriere, Virginia Space Grant Consortium ALL GRADES

Math in Science

Bring the excitement of "Hidden Figures" story to your classroom with the NASA STEM Activities. In the sixties, the U.S. was on an ambitious journey to the moon, and NASA's human computers helped get NASA there. This session will engage the "Hidden Figure" Katherine Johnson. Walk away with a collection of resources and educational activities for students in grades K-12. Each activity and resource includes a brief description, videos, and aligns to education standards. (not-for-profit exhibitor presentation)

Coding in a Flash! Crystal Ballroom E

Jeff Lukens, Texas Instruments ALL GRADES

Engineering

Using a simple coding language, we will program a device to do some simple functions. Come and join the fun as we make lights blink, simulate stoplights and code in your favorite songs! No coding experience necessary! (commercial exhibitor presentation)

Inquiry, Incorporated Harrison/Tyler

Jennifer Maguire,Virginia Tech; Brenda Brand,Virginia Tech; George Glasson,Virginia Tech ALL GRADES

General Science

This session will explore the fundamental aspects of inquiry-based teaching and address some of the common misconceptions about inquiry. Participants will learn how to incorporate inquiry-based teaching strategies into their classrooms while still being conscious of time constraints and a standards-based curriculum. Sample lessons for a variety of grades and subjects will be given and discussed.

Session 8 • Saturday • 9:35 am - 10:25 am

Field Investigations in a "Schoolyard" Reclaimed Ecosystem Crystal Ballroom D

Donna Rowlett, Gate City High School; Dawnn Williams, Gate City Middle School ALL GRADES

Environmental Science

Discover effective ways to utilize your school's outdoor space for field investigations, possible MWEE's, and PBL activities. We will share our community and grant resources that you will likely find in your own neighborhood. Discover our journey to reclaim an ecosystem and provide field experiences to our students. Each participant will assemble a mini rain barrel & receive hand-outs for field investigation ideas and community & grant resources.

Effects of Environment on a New Life Form Crystal Ballroom A

Susan Stanbery, Campbell County Schools/Explore Learning ALL GRADES

General Science

According to Explore Learning, "Experimental design is one of the most important concepts in science for students to grasp, and one that is often overlooked. The Effect of Environment on New Life Form Gizmo™ allows students to investigate the effect of three variables on a fictional alien organism. In this investigation, students will see the importance of changing only one variable at a time." (commercial exhibitor presentation)

Session 9 • Saturday • 10:40 - 11:30 am

Force, Mass, & Marshmallows Wilson

William McConnell, Virginia Wesleyan College; Mindy Gumpert, Old Dominion University;
Alexis Greene, Virginia Wesleyan College ELEM

Physics/Physical Science

The integration of engineering and science practices within science education reform has given much attention to instructional methods that use engineering design challenges to integrate STEM. Join us to experience an engaging, inquiry-based 5E lesson that provides opportunities for engineering design, data collection and analysis, and scientific argument. We will provide participants with a 5E lesson plan, scaffolds, and several supplemental materials.

The Panda - Data Collection at the Elementary Level Crystal Ballroom A

Amanda McCrea, Fisher Science Education ELEM

General Science

Come explore the Panda! A hands-on, multi-sensor module for younger scientists! The Panda makes it easy to seamlessly introduce data collection in your elementary science class. Students will become more comfortable with data collection and what the numbers and units mean. The device is "plug and play" with nine built in sensors. Free software and labs are available to use with the device. Panda devices will be available at the workshop for you to explore! (commercial exhibitor presentation)

Family STEAM Nights 101 Jefferson Boardroom

LoriAnn Pawlik, Penn Elementary School ELEM

General Science

This session will encourage and give you tools to help develop a time of STEAM exploration within your classroom, grade level, or school. We will consider your audience, themes, community, and SOLs. Come find out and experience low-pressure planning and activities that invite your students and their families to experience the enjoyment of science! Yes, YOU can do it!

The PMAEST Application Process Brush Mtn.

Anne Petersen, Virginia Department of Education; Laura Casdorph, VDOE ELEM

General Science

The Presidential Award for Excellence in Mathematics and Science Teaching is a program that recognizes teacher in each state for their accomplishments in the classroom. The focus of the award for 2017-2018 is on elementary teachers. This session will provide information about this prestigious award and the application process.

Developing Models through Sense Making Crystal Ballroom B

Donna Ralph, Narrows Elementary School/Specialty Science; Hannah Dupuis, School Specialty ELEM

General Science

Conceptual models aid students in representing and communicating their understanding of science concepts. Through "sense-making" strategies students can become experts at creating conceptual models! Come explore hands-on activities from FOSS and experience instructional strategies that help students make sense of scientific phenomena and develop conceptual models of their thinking. Activities for mixtures and solutions and waves will be highlighted. Materials will be provided. (commercial exhibitor presentation)

Adrift in the Sea of PBL? We Can Help! Buck Mtn. A

Jordan Thayer, Science Museum of Western Virginia; Hannah Weiss, Science Museum of Western Virginia ELEM

Biology/Life Science

The Science Museum of Western Virginia has developed several programs using PBL, including a week-long day camp that encourages campers to think critically about biology through exploring aquatic ecosystems via research and hands-on activities. This workshop will model how educators adapted PBL for a week-long time-frame and participants will discuss how they can adapt this strategy to their classrooms.

(not-for-profit exhibitor presentation)

STEM + the Arts = STEAM - Infusion Supports a Growth Mindset Mill Mtn.

Susan Bardenhagen, VAST Region IV Director ELEM-MS

General Science

Scientists, Technologists and Engineers, and Math educators identify that our students and future workforce need problem-solving, critical thinking, and innovative strategies. Artists acknowledge that their creative efforts are influenced by scientific inquiry, mathematical patterns, and the design process. STEAM-infused education can then be a community's vehicle to preparing its future. This workshop will provide current research and model cross-cutting instructional strategies.

Using Technology to Engage Scientists! Crystal Ballroom C

Kelly Clough, Louisa County Public Schools; Marsha Kennedy, Louisa County Public Schools ELEM-MS

General Science

Are you looking for ways to integrate science with technology? There are several online options that will give your students an engaging way to practice science concepts in class. This session will introduce you to free sites like Quizlet, Quizizz, Kahoot, and Nearpod. Within each site you can search for already created topics or create your own. Plus, they provide awesome feedback! Join us with your LAPTOP or DEVICE to learn how to take your science review sessions to the next level.

Turning Curious Customers into Savvy Scientists Harrison/Tyler

Wendy Grimshaw, Salem City Schools ELEM-MS

General Science

Through scientific investigation, reasoning, and logic, K-8 students can better understand their world, and can improve on the human condition in it. Experience the fun of consumer product testing that highlights inquiry as a means of constructing scientific understandings. Then craft a grade-appropriate, standards-based lesson that engages students in the fluid set of practices used by scientists during a consumer product testing investigation.

Sports Science: Digital Resources to Connect Sports to STEM Bent Mtn.

Eric Johnson, EVERFI; Brooke Yoder, EVERFI ELEM-MS

Math in Science

EVERFI's Hockey Scholar modules bring science, technology, engineering and math concepts to life using the exciting, fast-paced game of hockey. Through 12 immersive online labs, students build their understanding of fundamental STEM concepts, like geometry, energy and forces. Each module is designed to build students_ scientific thinking and problem solving skills. Learn how to best implement EVERFI's engaging science content and make real-life connections to sports that your students will love! (commercial exhibitor presentation)

What a WATER-ful World Tinker Mtn.

Alex Shafer, James Madison University; Eric Pyle, James Madison University; Robie Higdon, James Madison University MS

General Science

"Water World" at the annual Expanding Your Horizons conference in March 2017, targeted girls in grades 6-9 interested in STEM. Join us to experience this exciting lab first-hand, and engage in discussion afterwards about the tools and techniques used in developing this lab. These include the 5e model, inquiry based instruction, differentiation strategies, and much more. Lesson materials will be available.

ASM Teachers Camp - STEM Educators, Come One and All! Monroe

Roger Crider, ASM International Education Foundation MS-HS

Chemistry

ASM Teachers Camp® provides STEM educators with the tools to excite their students and further their professional development. This week-long, hands-on lab experience shows educators how to use applied engineering techniques in their classroom. This is an idea-generating workshop making math and core science principles more enticing and relevant. Materials topics are great motivators in any engineering, technology or science course as students complete projects of personal worth to them. (not-for-profit exhibitor presentation)

Use Data Collection to Merge Science and Math Crystal Ballroom E

Jeff Lukens, Texas Instruments MS-HS

Math in Science

The integration of science and mathematics should be a natural thing, and it is the foundation of any good STEM teaching. Data collection is crucial in all science classes and the analysis of the data is a great way to bring math into the science classroom. This session will involve all participants in data collection activities that can be done in any classroom. Common, easy-to-use technology will be used for the activities and this session.
(commercial exhibitor presentation)

Evolution for Educators: An Entire Free Unit of Materials Buck Mtn. B

Christopher Moran, Teacher Institute for Evolutionary Science (TIES) MS-HS

Biology/Life Science

A middle and high school science teacher covers many areas of science within his/her annual curriculum. It's not easy to be an expert in all of them. The purpose of our presentation is to inform interested middle school science teachers about the most up-to-date concepts of natural selection and evolution in order for them to confidently cover the topics in their classrooms. The material is available to high school teachers as well. We also have ready-to-use online resources for the classroom.

Session 9 • Saturday • 10:40 - 11:30 am

Resources for Earth Science Students in Class and at Home Washington Lecture Hall

Andy Epton, Gretna High School HS

Earth/Space Science

New resources for the Earth Science classroom! I have created a website, a blog, and a book that students and teachers alike can use to supplement the information from the classroom. We will discuss each of these resources and how to utilize them as thoroughly as possible. I will also solicit feedback on any changes that the website might need. These are new and unique resources to help students prepare for the SOL.

Expansion of NASA STEM Digital Badges for K-12 Educators Crystal Ballroom D

Marile Colon Robles, NASA Langley Research Center; Rosemary Smith, AERO Institute/NASA Langley Research Center ALL GRADES

General Science

Digital badges, or microcredentials, are online representations of learning experiences and activities that tell a story about the learners education and skills. NASA Langley Research Center's Office of Education has developed new digital badges expanding offerings for K-12 Educators correlating NASA real-world projects with NASA workforce. This session will walk through what are digital badges, how are they used as professional development, and descriptions of the new opportunities. (not-for-profit exhibitor presentation)

Explore First Robotics Progression of Programs Madison

Edward Sherlock, Tunstall Robotics Team 5950; Harriet Sherlock, Tunstall Robotics Team 5950 ALL GRADES

Engineering

We will explain the FIRST Robotics Program. Information will be provided about the complete progression of FIRST robotics programs; FIRST Lego League Jr. grades K-3, First Lego League grades 3-6, First Technical Challenge (FTC) grades 7-12, and the capstone, First Robotics Championship (FRC) grades 9-12. Then see a demonstration of an FRC robot and ask questions from team members and mentors. Information and resources will be provided about how to start a FIRST robotics team at your school.

Session 10 • Saturday • 11:45 - 12:35 am

Integrating Literacy Strategies into Science Instruction Jefferson Boardroom

Ashanda Bickham, Norfolk Public Schools ELEM

General Science

During this session, educators will explore strategies for linking science and literacy to support students' abilities to read, write, and discuss in the context of science and inquiry-based learning using fiction and nonfiction texts. A hands-on experience of how science supports literacy and literacy supports science will be shown through pre-reading strategies, nonfiction reading text, post-reading applications and hands-on science experiments.

Arguing the Environmental Impact of Paradise Wilson

Mindy Gumpert, Old Dominion University; William McConnell, Virginia Wesleyan College ELEM

Environmental Science

An important goal of science education is to involve students in argument from evidence (NRC, 2012). However, facilitating argument in an elementary classroom can be a challenge for anyone. Come argue with us! The context of a perceived paradise sets the stage for claim, evidence and justification. We will provide all participants with an environmental science 5E lesson plan, scaffolds, and supplemental materials.

Sound Off! Developing Models and Animal Adaptations Crystal Ballroom B

Donna Ralph, Narrows Elementary/School Specialty Science; Roxane Dupuis, School Specialty ELEM

General Science

Develop interactive concrete and conceptual models of waves to help students visualize and explain sound and energy transfer. Participate in a simulation to explore how animals use their senses of hearing to survive in their environment. Materials provided. (commercial exhibitor presentation)

STEM, STEAM, Engineering, and Design Thinking? No Problem! Crystal Ballroom E

Becky Schnekser, Cape Henry Collegiate School ELEM

Engineering

STEM, STEAM, Engineering, and Design Thinking do not have to be scary — come learn simple yet meaningful ways to bring STEM, STEAM, Engineering, and Design Thinking into your classroom. Experience examples of easy materials to use, lesson plans, and activities to take with you!

Taking the Mystery Out of PBL Buck Mtn. A

Hannah Weiss, Science Museum of Western Virginia; Jordan Thayer, Science Museum of Western Virginia ELEM

Chemistry

Examine a crime scene, discover clues, and solve a mystery while exploring K-5 accessible chemistry in a hands-on manner with the Science Museum of Western Virginia. Along the way, participants will discuss the reasoning and method behind designing a mystery-themed experiment and work towards creating a plan for implementing a similar PBL-based lesson in their own classrooms. (not-for-profit exhibitor presentation)

Worm Spit: Integrating Curriculum by Studying the Silk Worm Crystal Ballroom A

Michael Bentley, Virginia Museum of Natural History; Teresa Auldridge, Science Education Consultant ELEM-MS

Biology/Life Science

Students (and teachers) are sometimes averse to interacting with insects, yet both benefit from having live, non-traditional animals in the classroom. Silkworms provide opportunities for them to practice skills in scientific observation, learn respect for living things, and witness the marvel of metamorphosis from egg to larva, pupa (silk cocoon), and adult moth. Students can also explore behavioral and structural adaptations.

Tackling Environment-Based Learning: a Middle School Model Bent Mtn

Elise Sheffield, Boxerwood Nature Center; Julia Lipscomb, Maury River Middle School; Gretchen Hall, Maury River Middle School; Sarah Hockman, Maury River Middle School ELEM-MS

Environmental Science

Maury River Middle School offers a model of how collaborating with local partners leads to better science, engaged learners, and an improved environment. In partnership with the Boxerwood Nature Center, we use our local creek as an integrating context, engaging 450 students each year in field research specific to each grade's SOLs. In this panel presentation we will outline our model and explain how we addressed logistical challenges. Come get inspired to set something up in your own community!

Integrating Reading Comprehension Strategies in Science Mill Mtn.

Adrienne Britton, Norfolk Public Schools MS

General Science

Teachers agree - many adolescents do not know or use literacy strategies. When teachers learn literacy strategies, implement the newly learned strategies in the classroom, and see student learning increase, they realize that literacy strategies are really learning strategies. Participants will examine before, during, and after reading comprehension strategies - emphasized in Power Tools for Adolescent Literacy - and how they can be incorporated into science instruction.

The Magic of Science! Introduction to magic with "MisterE" Brush Mtn.

Robert Ellis, South County Middle School MS

General Science

You can learn basic magic principles, skills, and secrets of props from a real magician. These demonstrations/inquiry-based events reinforce a student's ability to observe, predict, and infer before providing possible explanations. In addition, I will show how students can design and conduct their own investigation. All activities are aligned with the Virginia SOL (PS.1-11), and comply with SOL and NSTA safety guidelines. Learn to make boredom disappear!

Using Argument-Driven Inquiry to Transform Science Labs Crystal Ballroom D

Jonathon Grooms, The George Washington University MS-HS

General Science

Arguing from evidence is a key practice of scientists. Come participate in an Argument-Driven Inquiry investigation to learn how to engage your students in scientific argumentation to model the essential practices of the scientific community. ADI is a research based instructional model that will help your students learn how to design and conduct investigations, analyze and interpret data, communicate ideas through argumentation sessions, and demonstrate understanding with scientific writing.

Oceans Matter - The Maury Project and More Buck Mtn. B

Kimberly McKinley Taylor, Village School/Maury Project MS-HS

Earth/Space Science

Many students, whether they live on the coast or inland, do not know the Earth's oceans are in trouble. Oceans Matter will use a three-pronged approach to share the goals of the American Meteorological Society's Maury Project. The session will include a discussion of the Five Es, will highlight shifts in the Next Generation Science Standards (NGSS) and will provide a demonstration of transitioning to three-dimensional teaching and learning using The Maury Project's hands on activities.

Asynchronous Learning in a Traditional Classroom Tinker Mtn.

Michelle Plunkett, Riverside High School MS-HS

General Science

Want your students to learn at different paces? Tried other differentiation methods that didn't work? Come learn how to put your students in charge of their own content.

Chemistry Connections with Limited Time and Budget Monroe

Tammy Stone, Rockingham County Public Schools MS-HS

Chemistry

Connect students to the curriculum by doing hands on activities that engage students and explicitly connect students to concepts and chemistry fundamental understandings. Come do these activities first hand during this session that you can implement into your instruction.

Engage your High School Students in SOL Review Washington Lecture Hall

Erin Davis, Randolph-Henry High School; Pam Dunnavant, Randolph-Henry High School HS

Earth Science/Biology

Come join us and discover new ways to prepare your high school students for their end of course SOL assessments. Learn how to scaffold the Biology standards through interactive games and dump sheets that increase confidence for test day. Utilize Earth Science cut and sort manipulatives to tackle technology enhanced items. Earth Science and Biology review materials will be given out to all participants, but our ideas could be adapted for virtually any subject.

Next Year's PDI: DoubleTree by Hilton Hotel, Williamsburg, Nov. 15 - 17, 2018
Theme: ***Diversify and Strengthen Science for All***

How to Do Science on a Non-Existent Budget

Cancelled

Juliane Codd, Richmond Public Schools ALL GRADES

General Science

Do you find yourself asking "How am I supposed to do hands-on when I don't have anything for them to use??" Struggling to reinforce those ".1" objectives? Come learn how hands-on can be accessible to any teacher, in any district, with a shoe-string budget! Hands-on learning and Minimal use of powerpoints, I promise."

A Recipe for Standards-Based Success Madison

Kelly Minton, Freedom High School ALL GRADES

General Science

Is your school moving towards standards-based grading? Ever feel overwhelmed at the idea of charting every student's progress for every standard? Implementing standards-based grading doesn't have to be any harder than mastering a new recipe: both take planning, prep work, and patience. Come and get ideas you can implement tomorrow for how to take a "mise-en-place" approach to standards-based instruction — and what to do when your "recipe" doesn't turn out quite like you expected!

Warnings! Warnings! Warnings! When is it enough?

Cancelled

Lindsay Toth, Virginia Beach City Public Schools ALL GRADES

General Science

Classroom management is something all teachers struggle with. Participants will learn strategies that change behaviors such as diffusers, self-control (for the teacher!), prompting techniques, teach-to's and refocus. Find out how your beliefs, teaching style, and even your classroom arrangement could be causing behavior problems. You will learn techniques and strategies that work, and don't cause extra work for the teacher! Teachers will find themselves with more time to deliver content.

Do you Need a Certificate of Attendance?

POST-PDI SURVEY AND CERTIFICATE OF ATTENDANCE

Log on to www.VAST.org, click on "Annual PDI" in the black bar and then click on "2017 post-PDI Survey and Certificate of Attendance"

Complete the survey and print your Certificate of Attendance.

Next Year's PDI: DoubleTree by Hilton Hotel, Williamsburg, Nov. 15 - 17, 2018
Theme: *Diversify and Strengthen Science for All*

Online Concurrent Session Presentation Proposal Form for the 2018 PDI will be open from February 1 to May 1, 2018.

Don't Miss it !

Saturday
12:50 p.m. – 2:20 p.m.

General Session III – Meet Your New VAST Officers
Speaker: Callan Bentley, Northern VA Community College
Astonishing Insights: How Science Helps Us Get Out of Our Heads and See the Real World
Door prize giveaway at the end of the session.