



VAST's Vision:
*Excellence in Science Education
Through Innovation*

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VAST.Org or <https://vast.wildapricot.org>
Check the web for news, conference
updates, registration, and forms.

The Science Educator

Summer 2017

A Publication of VAST, The Virginia Association of Science Teachers

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Celebrate NASA Langley Research Center's (LaRC) Centennial at the 2017 VAST PDI! This once-in-a-life-time 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.

The new GLOBE Observer app will accompany the Centennial Exhibit. Explore and join the GLOBE community by contributing important scientific data to NASA and GLOBE, your local community, and students and scientists worldwide.

In addition, NASA Langley's Office of Education and Science Directorate will team up with fellow educators to demonstrate new activity kits.

- Earth Right Now. Your Planet is Changing. We're on it.
- Technology. Technology drives exploration.
- ISS, Off the Earth, for the Earth.
- Aeronautics. NASA is with you when you fly.
- Mars. Join us on the journey.
- Solar System and Beyond. NASA: We're Out There.

**NASA's Centennial Experience Exhibit (including the above features) will be open during VAST PDI exhibit hall hours at the Hotel Roanoke.*

Visit NASA's Centennial Experience Exhibit at VAST:

Thursday, November 16th, 2017

Friday, November 17th, 2017

Saturday, November 18th, 2017

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

7:30 a.m. - 10:30 a.m.

12:30 p.m. - 5:30 p.m.

7:30 a.m. - 11:30 a.m.

From the Executive Director

Summertime and the living is busy.... busy... busy.... busy....



What are you doing?
Doing a month in the sun for fun?

Working to get extra money?
Teaching summer school? Working at a camp?
....and they say we only work 10 months out of year.

Who are they kidding!!!!

Well....we hope that whatever you are doing that you are planning to take time for yourself and come to your PDI in November. You will need a break by that time.

What could be more rewarding for you?

-Donna Sterling Precon with Zike skills...

I LOVE FOLDABLES!

Or

-The NASA 100th Anniversary Mobile Unit....only arriving at limited places and yes VAST is the lucky one!!!

Or

-The Elementary-Middle-High workshops

Or

-General session speakers,

-Concurrent speakers,

-Auction and DJ

-Exhibits.

Susan Booth, EdS

Don't miss these golden opportunities. Register now!!!!
See you in the Fall.

Executive Director

Reminder: 2017 Sterling Award Application Deadline

Applications are being accepted from elementary teachers for the 2017 Sterling Award, and directions for the application can be found at: <https://vast2016.wildapricot.org/Awards>

The deadline for applications is July 15.

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Shirley Sypolt
VAST President 2017



We are Celebrating Science! at the 2017 VAST Summer Retreat

VAST (The Virginia Association of Science Teachers) has a legacy of 65 years of promoting outstanding science throughout our state, and this summer, one of the ways our organization is “celebrating science” is by having our board members & PDI committee members participate in a weekend retreat at Camp Piankatank in Middlesex County.

At the retreat, we will be mainly focusing on membership; as identified by our organization’s strategic plan. We will also be brainstorming ways to promote science opportunities throughout our eight VAST regions, ways to support our various committee chairs, and ways to support our organizational support board members. Another focus for our retreat will be to determine how we (as a state science organization) can better meet the needs of our members, through our new website.

Along with holding several break-out sessions to accomplish the above focus tasks, we also will take the opportunity to re-affirm our love of science by sharing some of our favorite science activities with each other; to include science labs/activities, hiking, canoeing, swimming, campfires with S’mores, and late night astronomy.

As the president of VAST this year, I have thoroughly enjoyed working with our exceptional board members and I am really looking forward to our retreat.

Come celebrate science with us in 2017!

Shirley Sypolt VAST President 2017



COMMONWEALTH of VIRGINIA

DEPARTMENT OF EDUCATION

P.O. BOX 2120

RICHMOND 23218-2120

DATE: June 22, 2017

TO: Science Educators

FROM: Anne M Petersen, Ph.D.
Science Coordinator
Office of Science, Technology, Engineering, and Mathematics

Laura Casdorph
Science Specialist
Office of Science, Technology, Engineering, and Mathematics

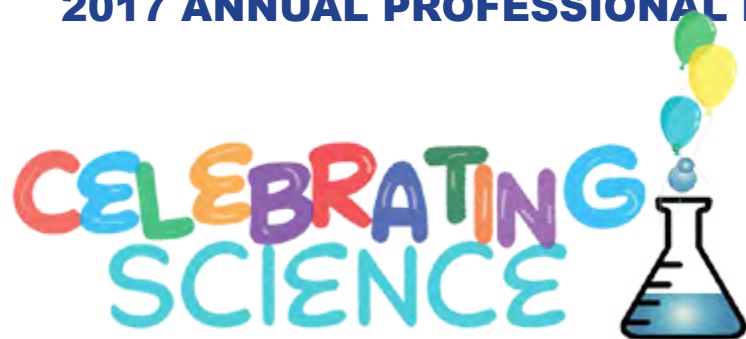
SUBJECT: 2017 Virginia Association of Science Teachers Professional Development Institute

The Virginia Association of Science Teachers (VAST) and the Virginia Department of Education are pleased to announce the 2017 VAST Professional Development Institute (PDI), Celebrating Science, to be held November 16-18, 2017, at Hotel Roanoke and Conference Center, Roanoke, Virginia. The VAST PDI is a forum for science educators and administrators to network with fellow science teachers, gain new instructional strategies and lesson ideas, enhance science content knowledge, and experience cutting-edge technology. This year's VAST PDI will offer over 200 concurrent sessions intended to support the *Virginia Science Standards of Learning* as well as Virginia Department of Education initiatives. In addition, presentations will be conducted by nationally known keynote speakers. The VAST PDI preconference is designed to provide educators and administrators the opportunity to participate in a hands-on short course on three-dimensional graphic organizers conducted by Dinah Zike as well as other targeted hands-on workshops.

VAST, a professional association with over 2000 members, advocates for high-quality science instruction for all students. The VAST PDI is designed to provide sessions for educators and administrators in all science content areas and at all grade levels. The PDI also provides an avenue for communication among all members of the science teaching community.

We encourage science educators and administrators to take the opportunity to include VAST PDI as part of their professional development plan. The VAST PDI provides educators an engaging opportunity to earn relicensure points while learning strategies to be used in the classroom.

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



VAST PreCon

Sponsored by
Donna Sterling Institute

Success for All with Dinah Zike Strategies!!

Hotel Roanoke and Conference Center

THURSDAY, November 16, PRE-CONFERENCE

8:00 am - 3:00 pm

Dinah will be at the PDI PreCon in person Thursday afternoon
and will be at the Dinah Zike Booth in the exhibit hall on Friday.

"A Dinah Zike workshop that includes strategies for English language learners should be a very rich experience for your teachers."
Dr. Juanita Jo Matkins, Emerita Professor of Science Education at College of William and Mary

"Each time I attend the DZ Academy I become reenergized and inspired not only by Dinah and her staff, but by the other Academy participants. The networking opportunities are a real plus. I have become more effective at my job as curriculum specialist because of the strategies and techniques I have learned at the DZ Academy. As I return to my district, I am armed with a new toolkit of folding techniques to share as I prepare staff developments for teachers. Dinah's inventing and designing continue to amaze me. She always has something new to share, and more ideas ready to hatch!" Susie Orr, Educational Specialist, Elementary Social Studies, Fairfax County Public Schools, Virginia.

Preregistration is required. Register online at www.VAST.org

The Sterling Committee is excited to announce the Pre-Conference at the 2017 VAST PDI in Roanoke Virginia, on November 16, 2017 will feature the Dinah Zike strategies for successful science teaching. Please join us at the Hotel Roanoke from 8:30-3. You may register at VAST.org to reserve your place. **Registration deadline is October 1. No onsite registration is available for the PreCon.** The cost is \$125 and includes the professional development workshop, book, breakfast and lunch plus a materials packet.

Participants will make three-dimensional interactive graphic organizers that can be used to teach Virginia science curriculum standards. Attention will be paid to vocabulary development, as that is a major hurdle for understanding science concepts for struggling learners, including ELL. The activities presented are appropriate for use before, during, and after science instruction, and they are appropriate for recording basic concepts, observations, investigations, experiments, and assessment. Both independent graphic organizers (manipulatives) and dependent graphic organizers (note-booking strategies) will be featured. Teachers will leave the session with inexpensive activities that can be used immediately with their students.

Celebrate Science: Strengthening the 4Cs Using 3-D Interactive Graphic Organizers for Elementary Grades (K-5)

Join a Dinah Zike Certified Trainer in this fast-paced, hands-on presentation as s/he shares methods for strengthening Critical Thinking, Communication, and Collaboration Skills, while encouraging Creativity. This session will focus on 3-D graphic organizers, Visual Kinesthetic Vocabulary (VKVs) and interactive notebooking that can be used for daily grades, group work, projects, and/or study guides. Participants will leave the session with inexpensive, easy to develop strategies that can be incorporated into any science curriculum. Materials packets provided, *Dinah Zike's Big Book of Science*.

Celebrate Science: Strengthening the 4 Cs Using 3-D Interactive Graphic Organizers for Middle/High School (6-12)

Join a Dinah Zike Certified Trainer in this fast-paced, hands-on presentation as s/he shares methods for strengthening Critical Thinking, Communication, and Collaboration Skills, while encouraging Creativity. This session will focus on 3-D graphic organizers and interactive notebooking that can be used for daily grades, academic vocabulary, group work, projects, and/or study guides. Participants will leave the session with inexpensive, easy-to-develop strategies that can be incorporated into any science curriculum. Materials packets provided include the book *Notebook Foldables for Spirals, Binders, and Composition Books*.

VAST PreCon

Afternoon

Workshops



THURSDAY PRE-CONFERENCE HANDS-ON WORKSHOPS
November 16th, 3:15 pm – 4:45 pm

Preregistration is required. Register online at www.VAST.org

Register online at www.VAST.org. Deadline to register is October 31. Cost is only \$5.00 per workshop. No onsite registration is available for the precon. Each workshop is limited to 25 participants.

There is a workshop designed just for you!

ELEMENTARY WORKSHOP

GLOBE Elementary – Making the Science and Literacy Connection with Elementary GLOBE

Presenters: Tina Harte, Jessica Taylor, NASA

Elementary GLOBE develops literacy through Earth science-based storybooks that engage the natural curiosity of students through a variety of learning activities and science journaling experiences. In the hands-on learning session “Making the Science and Literacy Connection with Elementary GLOBE,”

participants will discover how the Elementary GLOBE storybooks can improve student literacy skills while engaging them in science-based learning. The characters within the Elementary GLOBE storybooks actively apply the following science process skills: asking questions, carrying out investigations, and finding answers by collecting, analyzing, and interpreting data about the world around them. The science content within the storybooks introduces students to key science

concepts in soil, water, clouds, seasons, aerosols, climate and Earth systems. Participants will be provided with a variety of learning activities, an implementation guide and science journal ideas that they can incorporate within their classrooms to promote the development of literacy skills while tapping into the natural curiosity of their students.

MIDDLE SCHOOL WORKSHOP

The Role of Reading and Writing in Inquiry-based Middle School Science Instruction

Presenter: Kip Bisignano, Delta Education

Enhance inquiry in the science classroom through reading and writing activities that complement hands-on science investigations. Scientists use reading and writing to confirm studies, explore applications, and communicate new evidence-based claims. During this session, participants explore energy transfer in a variety of activities and learn a process to embed reading and writing strategies within the context of inquiry-based

investigations. Participants will receive resources and materials to begin implementing effective reading and writing strategies during science instruction.

HIGH SCHOOL WORKSHOP

Environmental Science with Vernier

Presenter: Jackie Bonneau, Vernier
Learn how to use Vernier technology to study environmental science in the field or in your classroom. Water quality, renewable energy, and other topics from our Investigating Environmental Science through Inquiry and Renewable Energy with Vernier lab books will be performed using LabQuest 2 in this hands-on workshop. Data Sharing with mobile devices and mapping on Logger Pro will be demonstrated. Explore our wide range of tools that promote understanding of environmental science concepts. Vernier will raffle (2) \$50 gift certificates at the end of the workshop. Copies of labs used during the workshop and Vernier catalogs will also be available for attendees to take home.

Schedule-at-a-Glance

Wednesday, November 15, 2017

7:00 p.m.-8:30 p.m. VAST Board of Directors Meeting & Dinner

Thursday, November 16, 2017

Ticketed Dinah Zike Short Courses

7:30 a.m. – 8:00 a.m.

Check-in Desk Open

7:30 a.m.

Continental Breakfast

8:00 a.m.– 3:00 p.m. **Strengthening the 4 Cs Using 3-D Interactive Graphic Organizers for Elementary Grades (K–5)**

8:00 a.m.– 3:00 p.m. **Strengthening the 4 Cs Using 3-D Interactive Graphic Organizers for Middle/ High School (6–12)**

12:00 p.m. – 1:00 p.m.

Lunch

2:30 p.m. – 5:00 p.m.

PDI Registration Desk Open

Ticketed Pre-Conference Workshops

3:15 – 4:45 p.m. **Making the Science and Literacy Connection with Elementary GLOBE (NASA)**

3:15 – 4:45 p.m. **The Role of Reading and Writing in Inquiry-based Middle School Science (Delta)**

3:15 – 4:45 p.m. **High School Environmental Science (Vernier)**

PDI Opens

5:30 p.m. – 6:45 p.m.

General Session I – Welcome to the PDI

Keynote Speaker: **Andrés Ruzo**, National Geographic Young Explorer

“STEAMY lessons from the Boiling River of the Amazon”

(Door prize giveaway at the end of the session)

7:00 p.m. – 9:00 p.m.

Night with the Exhibitors and Meet Your Regional Director

(Complimentary Snacks)- (**Pasco**) (Cash Bar) (Winners of Exhibitor drawings posted at 8:30 pm)

Friday, November 17, 2017

7:15 a.m. – 5:00 p.m.

Registration Desk Open

7:30 a.m.

Continental Breakfast in the Exhibit Hall

7:30 a.m. – 10:30 a.m.

Exhibit Hall Open (Winners of Exhibitor drawings posted at 5:00 pm)

8:30 a.m. – 9:20 a.m.

Concurrent Session 1

9:35 a.m. – 10:25 a.m.

Concurrent Session 2

10:40 a.m. – noon

General Session II- Business Meeting

Speakers: **Andrés Ruzo**, National Geographic Young Explorer and

Kaleela Thompson, college student

“The Scientific Journey: How Bugs, Volcanoes and Curiosity Can Change the World”

(Door prize giveaway at the end of the session)

11:45a.m. – 1:00 p.m.

Ticketed Lunch

12:30 p.m. – 5:30 p.m.

Exhibit Hall Open (Winners of Exhibitor drawings posted at 5:00 pm)

1:10 p.m. – 2:00 p.m.

Concurrent Session 3

2:15 p.m. – 3:05 p.m.

Concurrent Session 4

3:20 p.m. – 4:10 p.m.

Concurrent Session 5

4:25 p.m. – 5:15 p.m.

Concurrent Session 6

6:15 p.m. – 8:15 p.m.

Ticketed Dinner/Awards Ceremony (Cash Bar)

8:30 p.m. – 10:00 p.m.

Auction and DJ (**Cash Bar**)

Saturday, November 18, 2017

7:30 a.m. – 10:00 a.m.

Registration Desk Open

7:30 a.m.

Continental Breakfast in the Exhibit Hall

7:30 a.m. – 11:30 a.m.

Exhibit Hall open (Exhibitor raffle results posted at 8:15 am)

8:30 a.m. – 9:20 a.m.

Concurrent Session 7

9:35 a.m. – 10:25 a.m.

Concurrent Session 8

10:40 a.m. – 11:30 a.m.

Concurrent Session 9

11:45 a.m. – 12:05 p.m.

Concurrent Session 10

noon – 12:30 p.m.

Pickup ticketed box lunch on your way into General Session III

12:30 p.m. – 2:00 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)



VAST 2017 Professional Development Institute

“Celebrating Science”

General Session Speakers



Sponsored by
Cengage Learning



Thursday, November 16, Evening

Andrés Ruzo, National Geographic Young Explorer

STEAMY Lessons from the Boiling River of the Amazon

In 2014, National Geographic Explorer Andrés Ruzo gave VAST a sneak-peak into his work at the Boiling River of the Amazon prior to its world-wide release. This year Andrés is back and eager to share exclusive behind-the-scenes updates-- highlighting new experiences and advancements in the scientific work and conservation efforts at this sacred geothermal site. Join us for a journey into the Amazon, that started with a childhood legend, and a spark of curiosity!

Investigating a childhood legend led him to the Shanay-timpishka, the “Boiling River” of the Amazon, and a sacred site to the indigenous tribes, where the water can reach over 95 °C (203 °F). The greatest mystery of this place: How can a “boiling river” exist 700 km (435 miles) from the nearest volcanic center?



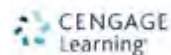
Friday, November 17, Morning

**Andrés Ruzo, National Geographic Young Explorer
and**

Kaleela Thompson, University of Florida

The Scientific Journey:

How Bugs, Volcanoes & Curiosity Can Change the World



Sponsored by
Cengage Learning

Truly “Celebrating Science” means acknowledging that there is a personal journey behind every new discovery and research paper. With the goal of exploring how to better connect students and adults to science, this session will explore the “scientific journey” from childhood curiosity to impactful initiatives. This session will open with an interview-style format moderated by National Geographic Explorer, Andrés Ruzo, and featuring budding butterfly expert, Kaleela Thompson. The latter part of the session will be a town hall style discussion where we will learn from each other as VAST educators, identifying tips and tricks that have worked in the classroom to keep students engaged on their scientific journeys.

Andrés Ruzo - Geoscientist - A National Geographic Young Explorer, scientist, author, science communicator and educator, who in 2011 became the first geoscientist granted permission to study the sacred Boiling River of the

Amazon. He believes that environmental responsibility and economic prosperity can go hand in hand, and uses science to unite both aims.

Kaleela Thompson is currently a 17-year-old high school senior at Kecoughtan High School in Hampton, Virginia who plans to attend college this fall. She was the 2013 recipient of the National Science Teachers Association’s Angel Award, which is given annually to honor one female student in grades 5-8, who has a strong connection to science. Kaleela has also won a Prudential President’s Volunteer Service Award and an Office Depot Adopt a Small Business Award (having founded her own organization ***My Home, My History and Our World***, an online site where kids can go to learn about places and their history. As a sixth grader, Kaleela was a published author, with her first book ***Oh Where Oh Where is my Swallowtail***. She won a full scholarship and spent a whole week as a 2013 Teen Ambassador to SeaWorld in San Antonio, Texas.

VAST 2017 Professional Development Institute
“Celebrating Science”
General Session Speaker

Sponsored by
Virginia Space
Grant
Consortium



Saturday, November 18, Afternoon

**Callan Bentley, Chancellor's Commonwealth
Professor of Geology,
Northern Virginia Community College**



***“Astonishing Insights:
How Science Helps Us Get Out of our Heads and
See the Real World”***

Callan Bentley currently is an assistant professor of geology and Chancellor's Commonwealth Professor of Geology at Northern Virginia Community College's Annandale campus. He received a BS in geology at the College of William & Mary (1996), an MS in geology from the University of Maryland, College Park (2004), and an MS in Science Education from Montana State University (2009). He currently is an assistant professor of geology and Chancellor's Commonwealth Professor of Geology at Northern Virginia Community College's Annandale campus.

He is a frequent contributor to EARTH magazine and is the author of the geology blog Mountain Beltway. Callan was a contributor to five geology and Earth science textbooks published by Pearson and is under contract to write another as lead author. He has become known as an innovator in

digital geology, in particular for the use of GigaPan images of outcrops and samples, a technique that allows “virtual field experiences” for distance learners and students with disabilities.

Callan was a 2010 Fellow of the Fine Outreach for Science initiative. The Virginia Community College System named him as the recipient of the 2012 Chancellor's Award for Teaching Excellence. NOVA honored him with the Presidential Sabbatical Award in 2013. He received the Biggs Award for Geoscience Teaching Excellence from the Geoscience Education Division of the Geological Society of America in 2014. The State Council of Higher Education for Virginia recognized Callan with the Outstanding Faculty Award in 2015.

IMPORTANT INFORMATION ABOUT THE VAST PDI

Registration for the pre-conference, short courses and workshops are not available on site. Deadline to register is October 31. Register on line at: [LINK](#)

Meal purchases are not available on site. Sign up for them when you register. [LINK](#)
Deadline is October 31.

The Hotel reservation link is now open on the PDI page at vast.org. [LINK](#)
See more information on [page 11](#).

PDI registration link is now open on the PDI page at vast.org [LINK](#)

A Link to purchase an exhibit hall booth on the PDI page at vast.org. [LINK](#)

PDI Booklet [LINK](#)

Questions: contact John Kowalski (pdi@vast.org) or
Susan Booth (susan.science@gmail.com)

President-Elect Letter August Newsletter

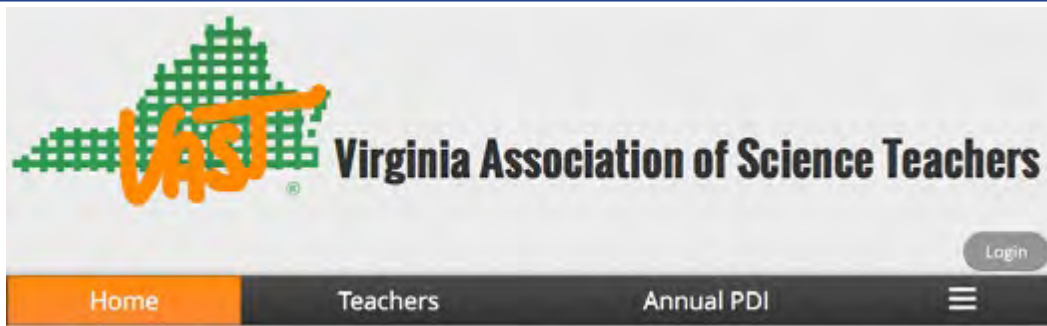


VAST members I do hope you have had or will soon have a chance to enjoy some summer relaxation. I want to remind you to take the opportunity to review our VAST website and avail yourselves of the many resources that are provided to our members. On our website, you can connect to information about the total eclipse that will be occurring on August 21. As teachers of science we can share this awesome phenomenon with our students and larger community. Remember the next time a total eclipse will be visible on the US continent is April 8, 2024, so don't miss this one. Check it out!

While you are there check out other VAST teacher resources. Primary among our resources is the fall PDI occurring this year in lovely Roanoke. We have an exciting line up of speakers, sessions and field trips! Hotel rooms are going fast so make your reservations. The VAST PDI is a perfect time to upgrade your content and pedagogical science skills. The Donna Sterling Institute scheduled for Thursday November 16 will feature a full day of PD by the Dinah Zikes organization targeted to both elementary and secondary teachers. We all know that our students really connect with foldables- now is the time learn some new way to integrate these tactical activities into our teaching.

Jackie

Dr. Jacqueline T. McDonnough, Ph.D.



VAST Website:

VAST.org

Attention VAST Members

By now you probably have seen the new VAST.org website, but have you logged in and checked your member profile? If not, it's easy to do.

When you arrive at the home page, look for the "login" button in the upper right hand side of the page. You have the option of logging in with the email address in the VAST contact or member database or through your Facebook or Google+ accounts. Once your profile page opens, you can: see and edit your membership information; adjust your privacy settings; see what email subscriptions you are signed up for; upload photos and create albums; and, see if you have any invoices or payments.

Being able to personally edit your member information is a powerful tool and it's very important to VAST too. We want to keep in touch and utilize the best ways to connect with you! In the meantime, if you ever have any questions about your membership, feel free to contact membership@vast.org

In the coming months, look for more opportunities to benefit from being a VAST member.

VAST 2017 PDI in Roanoke Hotels

**Contact Susan Booth, VAST Executive Director, with any questions or concerns.
(executive.director@vast.org)**



Hotel Roanoke, Roanoke, Virginia

If you can not reserve a room at the Hotel Roanoke, there is a list of overflow hotels with reservation instructions on the [PDI hotel page](#) on the VAST website.

Register for the PDI and Your Hotel Room in Roanoke, VA

**Online PDI Registration:
Online Hotel Information:**

**[Click](#)
[Click](#)**

Registration Deadlines

VAST 2017 Professional Development Institute

November 16 - 18, 2017



September 6 - Presenter Registration

October 15 - Early Bird Registration

October 31 - Donna Sterling PreCon

October 31 - PreCon Workshops

October 31 - Regular Registration

October 31 - Meals Registration

After October 31 - Register onsite.

VAST Professional Development Institute (PDI) 2017

DRAFT Concurrent Sessions

November 17-18, 2017 (Friday and Saturday)

Hotel Roanoke - Roanoke, Virginia

Accepted concurrent session presentations - published July 15

Concurrent session presenter PDI registration deadline - September 15

Integrating Literacy Strategies into Science Instruction

ELEM General Science

Ashanda Bickham, Norfolk Public Schools

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.

Elementary Extravaganza

ELEM General Science

Jaclyn Claytor, VAST

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!

Arguing the Environmental Impact of Paradise?

ELEM Environmental Science

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

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.

Using Critical Competitors in Primary Science Instruction

ELEM General Science

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

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)

Science Notebooks and Writing in the Primary Classroom

ELEM General Science

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

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)

Science Literacy Learning through Atmosphere Investigations

ELEM Earth/Space Science

Tina Harte, NASA Langley

NASA Langley 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)

Perfect Partners: Fostering Inquiry with Literacy & Science

ELEM General Science

Suzanne Kirk, Virginia Commonwealth University

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.

Incorporating Scientific Modeling in the 1st Grade Classroom

ELEM General Science

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

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

ELEM General Science

Jennifer Maeng, University of Virginia; Amanda Gonczy, Michigan Technical University

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

ELEM Engineering

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

Have Seeds Will Travel: 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

ELEM General Science

Tammy Maxey, Virginia Agriculture in the Classroom

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.

Force, Mass, & Marshmallows

ELEM Physics/Physical Science

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

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

ELEM General Science

Amanda McCrea, Fisher Science Education

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

ELEM General Science

LoriAnn Pawlik, Penn Elementary School

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!

VDOE Update for Elementary Teachers

ELEM General Science

Anne Petersen, Virginia Department of Education

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.

The PMAEST Application Process

ELEM General Science

Anne Petersen, VDOE; Laura Casdorff, VDOE

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.

Sound Off! Developing Models and Animal Adaptations

ELEM General Science

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

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)

Developing Models through Sense Making

ELEM General Science

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

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)

Praying For A Good Science Lesson? You Are in Good Hands

ELEM General Science

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

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.”

Using PASCO Wireless Sensors to Provide Digital Measurements

ELEM General Science

Shaye Robinson, Bassett Elementary School/PASCO

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)

STEM, STEAM, Engineering, and Design Thinking? No Problem!

ELEM Engineering

Becky Schnekser, Cape Henry Collegiate School

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! 1

Skulls Telling Stories

ELEM Biology/Life Science

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

“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.

Physics is Elementary with VIP

ELEM Physics/Physical Science

Jeff Steele, Liberty High School

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.

Adrift in the Sea of PBL? We Can Help!

ELEM Biology/Life Science

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

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 timeframe and participants will discuss how they can adapt this strategy to their classrooms.

Stimulating Simulations Supporting Student Success

ELEM General Science

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

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.

Beauty + Bounty: Growing My French Marigold Story

ELEM Environmental Science

Mary Van Dyke, Green STEM Learning

Be inspired by the ease of cultivating and saving seeds from French Marigold flowers. I'll demo and share integrated STEM, literature and art activities for elementary-age students: including a youtube, mini-book, and lesson plans. Enjoy the worldwide cultural aspects of these flowers, and inspire your students with simple wow factor and the associated learning: beauty + bounty.

Take some seeds from this session to plant next spring. Grow the flowers, harvest seeds, and save your own!"

Elementary Level Observation Skills and Activities

ELEM General Science

Scott Watson, Liberty University

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.

Taking the Mystery Out of PBL

ELEM Chemistry

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

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)

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

ELEM-MS General Science

Susan Bardenhagen, VAST Region IV Director

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.

Mission Mars - A STEM Integration Learning Experience

ELEM-MS Math in Science

Tracy Beckford, Southside STEM Academy at Campostella, Jerenda Manley, Southside STEM Academy at Campostella; Clara Hill-Potter, Southside STEM Academy at Campostella; Christma Lee, Southside STEM Academy at Campostella

It's time to blast off to a new frontier of teaching. If you sign up for this mission, you will have the opportunity to experience hand's on learning as an engineer, and work as a team to solve the problem of landing on Mars. This session will demonstrate how to increase the intellectual power of all students with STEM, 5E cross-curricular lessons, creativity, differentiation, cooperative learning, and the engineering design process. We hope you will join us for this epic journey.

Worm Spit: Integrating Curriculum by Studying the Silk Worm

ELEM-MS Biology/Life Science

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

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.

The Science in Me

ELEM-MS General Science

Tekita Blackwell, Roots for A-STEM, LLC

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.

NGSS Engineering for Everyone With Everyday Materials

ELEM-MS Engineering

Arthur Bowman, Norfolk State University

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.

Using Technology to Engage Scientists!

ELEM-MS General Science

Kelly Clough, Louisa County Public Schools; Marsha Kennedy, Louisa County Public Schools

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.

Makey Makey Fun and 21st Century Literacy

ELEM-MS General Science Adam Daniel, Science Museum of Western Virginia

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)

Hook, Line, and Thinker!

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

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.

Turning Curious Customers into Savvy Scientists

ELEM-MS General Science Wendy Grimshaw, Salem City Schools

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.

Team Building though Wind, Sea, and Robots!

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

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

ELEM-MS General Science Eric Hallal, Tussing Elementary School

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 pickers, nearpod, the use of a Google based classroom, and how to incorporate QR codes.

Newly Released E-Units by Project Learning Tree

ELEM-MS Environmental Science Page Hutchinson, Virginia Dept. of Forestry/Project Learning Tree

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, downloadable 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)

Uncovering the Past...Discovering the Future

ELEM-MS General Science Jimmy Johnson, Elmont Elementary School

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.

Sports Science: Digital Resources to Connect Sports to STEM

ELEM-MS Math in Science Eric Johnson; EVERFI; Brooke Yoder, EVERFI

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!

What do you see? Using SEM Images Unlock Curiosity

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

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.

continued



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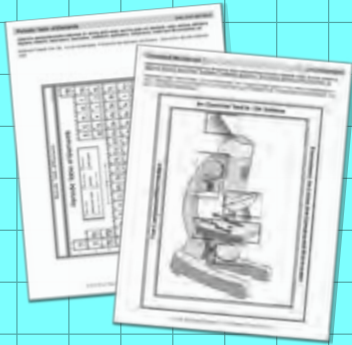
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Linking Science & Literacy with Problem Based Learning

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

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.

VT Science Festival: Science is Bigger Than You Think

ELEM-MS General Science Phyllis Newbill, Virginia Tech

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."

Implementing GLOBE Across Grade Levels in a K-8 Program

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

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.

Making the Ocean: an Immersive Experience for Fifth Graders

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

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.

Tackling Environment-Based Learning: a Middle School Model

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

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

MS General Science Adrienne Britton, Norfolk Public Schools

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.

PASCO Sensors to Study of Chesapeake Bay Watershed

MS Environmental Science Sabrina Burbanck, Spratley Gifted Center/PASCO

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)

Gas Exchange

MS Biology/Life Science Linda Culpepper, Lab-Aids

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

MS General Science Janine D'Elia, Salem Church Middle School; Rachel Hill; Salem Church Middle School

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!

Communicating through Science: Disciplinary Literacy

MS General Science

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

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 Magic of Science! Introduction to magic with "MisterE"

MS General Science

Robert Ellis, South County Middle School

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!

Exploring the Scientific Research Process with GLOBE

MS Earth/Space Science

Tina Harte; NASA Langley

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 the eTraining. (not-for-profit exhibitor presentation)

Engaging Students through Experimentation

MS General Science

Paula Leach, Longwood University; Virginia Lewis, Longwood University

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.

Boxplots and Histograms: Examining Shape and Spread

MS Math in Science

Virginia Lewis, Longwood University

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.

Activities and Simulations for Heredity and Adaptations

MS Biology/Life Science

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

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)

Engaging Demos, Visuals, and Hands-On Science

MS Physical Science/Life Science

Sheryl McLaughlin, Jones Middle School; Kimberly Riggs-Poole, Jones Middle School

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.

Conclusions Based on Evidence

MS General Science

Rebecca Musso, Stafford County Public Schools

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.

Building Oral Academic English in the Science Classroom

MS General Science

Jennifer Renn, Center for Applied Linguistics; Jillian Wendt, University of the District of Columbia; Mark Wilson, University of the District of Columbia; Jasmine VanStory, University of the District of Columbia

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.

What a WATER-ful World

MS General Science

Alex Shafer, James Madison University; Eric Pyle, James Madison University; Robbie Higdon, James Madison University

“What a WATER-ful 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.

The Virginia Energy Story

MS General Science

Kimberly Swan, The NEED Project

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)

Student Centered Learning in Middle School Science

MS General Science

Lisa Winn, Thornburg Middle School

Blended Learning, Station Teaching and Middle School ... Join me as I share my journey to a Student Centered Middle School Science Classroom. I will walk you through the creation of Blended Learning Notes using Teacher Created Videos, and I will share how I have turned hands on Science into Learning Stations in my middle school classroom. Come see how I have increased engagement, increased rigor and improved student collaboration while becoming a facilitator of learning.

Reducing Your School's Carbon Footprint and Enoying it...

MS-HS Environmental Science

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

Results of a NOAA Climate Stewards Grant and continuing activites instututed during the grant. 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. Also “use the other side” campaign. This has given our students a real hands experience to see that one person can make a difference.

Chemistry and the Atom: Fun with Atom Building Games!

MS-HS Chemistry

Erik Benton, School Specialty Science; Paul Glodek, School Specialty

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

MS-HS Earth Science/Biology

Melissa Bills, Glen Allen Middle School; Eric Byers, Highland Springs High School; SheAnna McCloud, Highland Springs High School; Rosalyn Hargrave, Virginia Commonwealth University

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.4

Biology Activity Learn & Share-a-Thon

MS-HS Biology/Life Science

Myron Blosser, Harrisonburg High School Governor's STEM Academy

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.

Curious by Design: Innovation Through Design Thinking

MS-HS General Science

Ana Cingel, Virginia Beach City Public Schools; Christopher Freeman, Virginia Beach City Public Schools

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.

Making Student Research a Reality

MS-HS Math in Science

Julia Cothron, STEM Author, Consultant, Advocate/VJAS

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.

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

MS-HS Chemistry

Roger Crider, ASM International Education Foundation

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)

Better Ratings in the Review Process for VJAS Papers

MS-HS General Science

Dorothy Doolittle, Christopher Newport University

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

MS-HS Physics/Physical Science

Craig Doolittle, Dozier Middle School; Erin Watson, Dozier Middle School

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

MS-HS General Science

Elizabeth Edmondson, Virginia Commonwealth University

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.

Using Argument-Driven Inquiry to Transform Science Labs

MS-HS General Science

Jonathon Grooms, The George Washington University

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.

Is it Ionic or Covalent

MS-HS Chemistry

Stephanie Harry, Kecoughtan High School

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.

Data Analysis for Students with MY NASA Data

MS-HS Earth/Space Science

Elizabeth Joyner, NASA Langley Research Center

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. Together 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)

Framing Secondary Science in Project Based Learning

MS-HS General Science

Meredith Kier, College of William and Mary

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.

Tiered Differentiation in Biology and Chemistry

MS-HS Biology/Life Science

Julia Kogut, Winchester Public Schools; Cathy Clark, Winchester Public Schools

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.

Grants and Other Resources for the Science Classroom

MS-HS General Science

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

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.

Keeping It Real: Integrating Real-World Applications

MS-HS General Science

Mark Levy, Roanoke Valley Governor's School

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.

Use Data Collection to Merge Science and Math

MS-HS Math in Science

Jeff Lukens, Texas Instruments

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)

The STEM Behind Diabetes and Breast Cancer

MS-HS Biology/Life Science

Jeff Lukens, Texas Instruments

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)

Redefining Science Instruction Using Technology

MS-HS General Science

Amanda Malbon, Virginia Beach City Public Schools; Ana Cingel, Virginia Beach City Public Schools

This session will focus on the what, why, and how of infusing technology into science lessons. Incorporating technology in a science classroom can be a challenge; however, when careful consideration to the balance of technology v. non-technology tasks is given, instruction can become more powerful. Various instructional models and lesson examples will be shared.

30 km or Bust! High Altitude Ballooning for Real Teachers

MS-HS General Science

Norm Marshall, Franklin Military Academy

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

Student Ownership of Learning in the Secondary Classroom

MS-HS General Science

Anne Petersen, Virginia Department of Education

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.

VDOE Science Update for Secondary Teachers

MS-HS General Science

Anne Petersen, Virginia Board of Education

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.

Asynchronous Learning in a Traditional Classroom

MS-HS General Science

Michelle Plunkett, Riverside High School

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.

Exploring Virginia's Forest Cover Types

MS-HS Biology/Life Science

Ellen Powell, Virginia Dept. of Forestry

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.

Converting Seagrass Research into a Hands-on Lesson Plan

MS-HS Biology/Life Science

Kristen Sharpe, Chesapeake Bay National Estuarine Research Reserve in Virginia

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)

Effective Teacher Behaviors That Promote Robust Learning

MS-HS General Science

Erich Sneller, Harrisonburg High School; Seth Shantz, Harrisonburg High School

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.

Chemistry Connections with Limited Time and Budget

MS-HS Chemistry

Tammy Stone, Rockingham County Public Schools

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.

Smorgasbord of Physics Activities and Demo

MS-HS Physics/Physical Science

Tony Wayne, Albemarle High School

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.

Teaching History of Science Activities Using Argumentation

MS-COL General Science

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

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.

Integrating Science in the University Classroom

MS-COL General Science

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

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!

MS-COL Biology/Life Science

Kathy Frame, Papillon Education Services LLC

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.

Moving Students from Passive to Active Learners

MS-COL General Science

Robbie Higdon, James Madison University

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.

Safety in Secondary Science Lab - Case Study

MS-COL General Science

Andrew Jackson, Harrisonburg City Public Schools

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.

VESTA Reboot: Virginia Earth Science Teachers Association

MS-COL Earth/Space Science

Russell Kohrs, VAST Earth Science Committee

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.

Data on a Shoestring: Using Archival Data in the Classroom

MS-COL General Science

Russell Kohrs, Massanutten Regional Governor's School

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

MS-COL General Science

George Meadows, University of Mary Washington

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.

Dynamic Chemical Demonstrations from Flinn Scientific

MS-COL Chemistry

Marvel Mike, Flinn Scientific, Inc.

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)

Meeting SOLs with an Engineering Challenge

MS-COL Engineering

Remy Pangle, James Madison University

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

MS-COL Earth/Space Science

Eric Pyle, James Madison University

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.

Digital Badging: A Comprehensive Science Portfolio

MS-COL General Science

Kianga Thomas, Norfolk State University; Arthur Bowman, Norfolk State University

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.

Google's G-Suite as a Teaching Tool

MS-COL General Science

Tony Wayne, Albemarle High School

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.)

Are they ready? The Importance of Technical Writing

MS-COL General Science

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

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.

Applying Good Observational Skills to Forensic Examination

HS General Science

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

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)

Forensic Science - Glass Analysis

HS General Science

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

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)

Chicken Decomposition Study: Forensics, Ecology, Behavior

HS Biology/Life Science

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

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)

DIY Remote Sensing to Investigate Climate Change

HS Earth/Space Science

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

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.

VIP Share-a-thon Session

HS Physics/Physical Science

Timothy Couillard, Virginia Instructors of Physics

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.

Gene Expression

HS Biology/Life Science

Linda Culpepper, Lab-Aids; Linda Culpepper, Lab-Aids

Students often have trouble conceptualizing how selective gene expression works. In this workshop, participants will use manipulative 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)

Engage your High School Students in SOL Review

HS Earth Science/Biology

Erin Davis, Randolph-Henry High School; Pam Dunnivant, Randolph-Henry High School

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.

Resources for Earth Science Students in Class and at Home

HS Earth/Space Science

Andy Epton, Gretna High School

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.

Nat Geo: Bringing the World into the Class with Technology

HS General Science

Stacey Fields, National Geographic Learning/Cengage

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)

Celebrating Innovative Technology for the Science Classroom

HS General Science

Cheryl Hinzman, Prince William County Schools; Joy Greene, Prince William County Schools

In this session, we will demonstrate the blending of science content with innovative digital tools. Participants will learn about enhancing instructional practices using virtual field trips, online simulations, and interactive classroom tools. Join us as we investigate sites including Nearpod, Phet Interactive Simulations, LiveBinders and more. These resources will allow your lessons to become more effective, engaging, and productive.

Using PASCO Sensors that Align with VA Biology SOL

HS Biology/Life Science

Kristen Massey; Kecoughtan High School/PASCO

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)

Drones in Citizen Science

HS Environmental Science

Paul Sarandria, Portsmouth Public Schools; Stephanie Leary, Portsmouth Public Schools; Jennifer Garcell, Portsmouth Public Schools; Judith Cozart, Portsmouth Public Schools

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.

Bullseye! Hitting the Target with Standards Based Chemistry

HS Chemistry

Isabella Yearwood, Prince William County Schools

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.

Virtual Rocks

HS-COL Earth/Space Science

Callan Bentley, Northern Virginia Community College

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.

VAST Colleges and Universities Share Session

HS-COL General Science

Suzanne Donnelly, Longwood University; Tricia Easterling, Radford University; Elizabeth Edmondson, Virginia Commonwealth University; Erin Peters, George Mason University

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.

Particle Physics Virtual Reality Project at Virginia Tech

HS-COL Physics/Physical Science

George Glasson, Virginia Tech; Leo Piilonen, Virginia Tech; Samantha Spytek, Virginia Tech; Christopher Dobson, Virginia Tech

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.

Chemistry Roundtable Discussion

HS-COL Chemistry

Stephanie Harry, Kecoughtan High School

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.

More Must Have AP & IB Chemistry Labs

HS-COL Chemistry

Paula Nottingham, Stonewall Jackson High School

This is a follow-up to last year’s session. This session will provide more AP or IB labs that fit the required criteria 9and 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.

Spectrophotometry for AP Chemistry and AP Biology

HS-COL Chemistry/Biology

Babette Shoemaker, Ocean Lakes High School

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)

STEM Majors in Natural Resources

HS-COL General Science

John Gray Williams, Virginia Tech

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)

Scientific Literacy Matters: Using Literature to Meet NGSS

ALL GRADES General Science

Clair Berube, Hampton University; Sueanne McKinney, Old Dominion University

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.

Integrating Chromebook™ with Vernier Technology

ALL GRADES General Science

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

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)

Integrating iPad® with Vernier Technology

ALL GRADES General Science

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

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)

Enhancing Spatial and Scientific Thinking Using GIS Technology

ALL GRADES General Science

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

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.

Planting Science: A Scientist / Student Partnership

ALL GRADES Biology/Life Science

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

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 science. Participants will be introduced to the program, the various modules and resources available through the program, and some techniques to practice with students.

How to DO Science on a Non-Existent Budget

ALL GRADES General Science

Juliane Codd, Richmond Public Schools

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.

The Perks and Pitfalls of Starting a Makerspace

ALL GRADES Engineering

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

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.

Use Storyline to Teach History of Science Integrated Lessons

ALL GRADES General Science

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

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.

Dirty Hands Wash Over Every Environmental Project’s Modality

ALL GRADES Environmental Science

Jim Disbrow, Millennium Project

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.

Exclusively for Pre-Service Teachers

ALL GRADES General Science

Suzanne Donnelly, Longwood University/VAST; Tricia Easterling, Radford University; Elizabeth Edmondson, Virginia Commonwealth University; Erin Peters, George Mason University

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

ALL GRADES Environmental Science

Cindy Duncan, Chesapeake Bay Foundation

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.

Seat to Feet! Activate Student Learning in Your Classroom

ALL GRADES General Science

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

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.

Hands On Physics and Renewable Energy

ALL GRADES Physics/Physical Science

Harold Geller, George Mason University

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.

Using Computer Simulations to Support Conceptual Change

ALL GRADES General Science

Amanda Goncz, Michigan Technological University; Jennifer Maeng, University of Virginia

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.

Science StoryWalks: Bridging the community and the classroom

ALL GRADES General Science

Erika Hackworth, Woodrow Wilson Middle School

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

ALL GRADES General Science

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

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

ALL GRADES Earth/Space Science

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

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.

Problem-Based Learning Templates and Activities for K-12

ALL GRADES General Science

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

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.

Using Case-Based Learning in K-12 Science Classrooms

ALL GRADES General Science

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

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.

Coding in a Flash!

ALL GRADES Engineering

Jeff Lukens, Texas Instruments

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

ALL GRADES General Science

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

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.

Using Target Labs in Science Teaching

ALL GRADES General Science

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

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

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

ALL GRADES General Science

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

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.

UVa Engineering Design Teacher Guide Manuals & Activities

ALL GRADES Engineering

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

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.

A Recipe for Standards-Based Success

ALL GRADES General Science

Kelly Minton, Freedom High School

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!

Project-Based Science Instruction in K-12 Classrooms

ALL GRADES General Science

Megan Oliva, University of Virginia; Yohanis Kassa, University of Virginia; Brittany Garvey, University of Virginia; Alexis Rutt, University of Virginia

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 PBSI 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.

Field Investigations in a "Schoolyard" Reclaimed Ecosystem

ALL GRADES Environmental Science

Donna Rowlett, Gate City High School; Dawn Williams, Gate City Middle School

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.

Literacy in the Lab: Best Practices for Instructing ELs

ALL GRADES General Science

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

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.

National Geographic Teacher Certification

ALL GRADES General Science

Becky Schnekser, Cape Henry Collegiate and National Geographic

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.

Explore First Robotics Progression of Programs

ALL GRADES Engineering

Edward Sherlock, Tunstall Robotics Team 5950; Jeff Hale Tunstall, Robotics Team 5950

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.

Effects of Environment on a New Life Form

ALL GRADES General Science

Susan Stanbery, Campbell County Schools/Explore Learning

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)”

Expanding Science Outside of the Walls of Your Classroom

ALL GRADES General Science

Franklin Stinson, Science Museum of Western Virginia

Scientific ideas do not need to stay in the classroom and it can be challenging for teachers to find the time to take students outside or get hands-on experiences. With some techniques that I have been using for years, teachers can get the students creating and doing their own hands-on-experiences. Students can take ownership of their discoveries and these discoveries can be used in SOL-based lessons!

Warnings! Warnings! Warnings! When is it Enough?

ALL GRADES General Science

Lindsay Toth, Virginia Beach City Public Schools

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.

Bringing NASA’s Hidden Figures into Your Classroom

ALL GRADES General Science

Marile Colon Robles, Texas State University/NASA Langley Research Center;
Rosemary Smith, AERO Institute/NASA Langley Research Center

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)

Expansion of NASA STEM Digital Badges for K-12 Educators

ALL GRADES General Science

Marile Colon Robles, Texas State University/NASA Langley Research Center; Rosemary Smith, AERO Institute/NASA Langley Research Center

Digital badges, or microcredentials, are online representations of learning experiences and activities that tell a story about the learner’s 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)

“Share and Compare” with NASA GLOBE Clouds Protocol

ALL GRADES Earth/Space Science

Marile Colon Robles, Texas State University/NASA Langley Research Center

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!

Earth: From the International Space Station to the Classroom

ALL GRADES Earth/Space Science

Kristyn Damadeo, NASA

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!

Preparing Your School for a Significant Weather Event

ALL GRADES Environmental Science Phil Hysell, NOAA/National Weather Service

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)

Bring the Story of "Hidden Figures" to Your Classroom

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

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)

NASA Engineering Design Challenges: Content vs Context

ALL GRADES Earth/Space Science Rosemary Smith, NASA Langley Research Center Marile; Colon Robles, Texas State University/NASA Langley Research Center

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!

Plant the STEM ...Pollinator Seedbombs in Space?

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

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."

What's Your Superpower? GBL in the Science Classroom

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

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)

Solar Eclipse August 21, 2017

On August 21, 2017, millions of people across the United States will observe a total eclipse of the Sun. The Moon will completely block the Sun, daytime will become twilight, and the Sun's corona will shimmer in the darkened sky. Here are some links to resources to help you understand, prepare for, and view this beautiful celestial event.

Information:

UVa's [Blandy Experimental Farm](http://blandy.virginia.edu/education/2017-solar-eclipse) has created a 2017 solar eclipse information web page with links to safety during the eclipse, sources for purchasing safety glasses, instructions for making eclipse viewers, lesson plans, science of the eclipse, and interesting interactive web apps.

<http://blandy.virginia.edu/education/2017-solar-eclipse>

For useful downloadables from NASA about the eclipse go to:

<https://eclipse2017.nasa.gov/downloadables>

What will the eclipse look like from where you live? Find out by visiting NASA's Eyes on the 2017 Eclipse 3D interactive, here:

<http://eyes.jpl.nasa.gov/eyes-on-eclipse.html>

You enter your city's or town's name and state and an animation will show you the eclipse from your location.

"On Nov. 13, 2012, a narrow corridor in the southern hemisphere experienced a total solar eclipse. The corridor lay mostly over the ocean but also cut across the northern tip of Australia where both professional and amateur astronomers gathered to watch."



Solar Eclipse - November 13, 2012

Credit: NASA/Cirtain

Safety:

Your students should not look directly at the sun! Special eclipse glasses are available, or you can make a pinhole camera for looking at the shadow of the eclipse rather than looking directly at the sun.

Find information about safe eclipse viewing at:

<https://eclipse2017.nasa.gov/safety>

There are several inexpensive options for safety glasses.

Vernier has a set of 40 for \$16

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



Question your world.





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

Mission: The Virginia Association of Science Teachers (VAST) is a community of Science educators whose mission is to:



- *inspire students,*
- *provide professional learning opportunities,*
- *build partnerships,*
- *advocate for excellence at the school, local, state and national level.*



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Please send articles, letters to the editor, or labs by the submission deadline, by October 1, 2017, for inclusion in the next paper PDI VAST Newsletter.

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