

**VAST VIRTUAL PROFESSIONAL DEVELOPMENT INSTITUTE
NOVEMBER 12-14, 2020
LIVE PRESENTATION SCHEDULE**

SESSION 1: THURSDAY 4:00PM – 4:45PM

Collaboration for Impact: Modeling an Integrated Partnership

Session 1 Room A Grade Level: ALL GRADES Content: General, Educational Partnership
Lillian Ledford, University of Virginia - Blandy Experimental Farm
Doni Hays, Clarke County Public Schools

Supported by a NOAA B-WET grant, formal and nonformal educators collaborate to bring project-based MWEs into the Grade 4-12 curricula. Here we focus on the 6th grade PBL and share both educator perspectives.

We emphasize integration of field experiences with classroom learning; building inter-content lessons, including student choice; strong teaching teams and organizational partnerships; and meaningful action projects. This session will be an interactive presentation with an open discussion.

Student Goals: The Classroom Compass

Session 1 Room B Grade Level: ALL GRADES Content: General
Erich Sneller, Harrisonburg High School

Like stellar constellations for old sailors, specific student goals give specific direction. Without them, we are unmoored from purpose. Thoughtful and detailed goals guide a student's education, providing them with reasons to engage in their learning. In this session, we will explore our current goals and update them. The dialogue and reflection in this session will put wind in your sails and emolden your mission as an educator.

An App for Identifying a Fossil and Determining its Age

Session 1 Room C Grade Level: HS-COL Content: Earth/Space Science
William Schmachtenberg, Franklin County Public Schools

Identifying index fossils to the genus level and determining the geologic age of the fossils can take years of training. Yet, establishing age from fossils is currently part of the Earth Science SOLs. I have created an app that helps students identify fossils and their geologic age. It is free to use at www.evwill.com. It even runs on a chromebook! The app includes representative fossils from the Cambrian to Cenozoic in Virginia.

Remote Learning - Keep Students Engaged

Session 1 Room D Grade Level: MS-HS Content: Biology/Life Science
Sheryl McLaughlin, Hampton City Schools

The pedagogy for blended (remote, flipped, online) learning differs from teaching in the classroom. This presentation will demonstrate and share lessons that keep students engaged and enhance learning with fun ways to present assignments: virtual classrooms, Bitmojis, themed assignment documents, escape type room activities, breakout room activities, active student participation, Google Slides, and Google Forms. Come learn how to create new, fun lessons.

Using Gifted Strategies in the classroom.

Session 1 Room E Grade Level: ALL GRADES Content: General
Deb Hicks, Spratley Gifted Center

This session will show you different gifted strategies that can be used by any classroom teacher. You will leave this session with ideas and strategies for use in your classroom. Some of the strategies include; choice boards, Kaplan's Icons, and independent learning contracts. A lot of these strategies can be adjusted to work in the inclusion classroom.

SESSION 2: THURSDAY 5:00PM – 5:45PM

Strategies for Chemistry and Physics Inquiry Online

Session 2 Room A Grade Level: HS Content: Chemistry/Physics
Chris Moore, SAVVAS Learning Co.

In Spring 2020, social distancing mandates changed the classroom and required teachers to adapt their strategies overnight. This was an unprecedented event, but the classroom is constantly evolving. In this presentation we will discuss practical strategies for online chemistry and physics science teaching and facilitating student interactions online. (Commercial Exhibitor)

Addressing Race & Gender Stereotypes in STEM through Books

Session 2 Room B Grade Level: ELEM Content: STEM Career Awareness
Donna Farland-Smith, Ohio State University

The Eureka! series is intended to expand opportunities for students to understand the nature of science and the work of STEM fields. In this session, participants will 1) engage in two sample lessons from the book series and 2) learn how the biographical stories of real-world people who pursue science and engineering methods are the basis for the lessons, and 3) gain an understanding of STEM as a human pursuit to link scientific literacy and STEM career aspirations.

Understanding the Electric Power Grid: from source to home

Session 2 Room C Grade Level: MS-HS-COL Content: Environmental Science, Engineering
Remy Pangle, Center for the Advancement of Sustainable Energy at James Madison University

In this session, we feature the KidWind Powergrid kit, available for loan from the Center for the Advancement of Sustainable Energy Lending Library at JMU. Participants will learn about the electric power grid, all the components, and discover how to use the Powergrid kit as a jumping-off point for their energy unit.

SESSION 3: THURSDAY 7:00PM – 7:45PM

Using Phenomena to Engage Students in 3-D Learning

Session 3 Room A Grade Level: MS Content: Biology/Life Science, Physics/Physical Science
Zipporah Miller, SAVVAS Learning Co.

Create purposeful, scaffolded project-based learning experiences inspiring students to construct explanations of natural phenomena. In this workshop, participants engage in experiences that model how to use storylines based on student questions to drive learning. (Commercial Exhibitor)

Game-Based Learning Increases Student Engagement

Session 3 Room B Grade Level: ELEM-MS Content: Science and Math, General
Joselyn Whetzel, Legends of Learning

Log-in to experience how SOL-aligned gaming increases student engagement and science test scores in your young scientists. Explore science (& math) by flying helicopters, building ecosystems & launching cows into outer space. Let's keep students excited about content. Participants will log-out with take-away methods to make their lessons more exciting, equitable, personalized and accessible from home. (Commercial Exhibitor)

Aaron Hernandez Case Study: The Anatomy and Physics of CTE

Session 3 Room C Grade Level: HS-COL Content: Physics/Physical Science, Anatomy/Physiology
Mike Florek, Glenvar High School
Lezlie Yaeger, Glenvar High School

This collaborative approach to studying chronic traumatic encephalopathy (CTE) begins with a case study of former NFL player Aaron Hernandez. Students applied critical thinking to Hernandez's story, beginning with mass media reporting and shifting to technical writing about the football-related brain damage. Anatomy and physics students

collaborated to design, construct, and test padding for football helmets. Anatomy students capped their case study with artistic depictions of CTE.

Overview of Climate Change

Session 3 Room D Grade Level: ALL GRADES Content: Biology/Life Science, Environmental Science
Eeman Salem, Chesterfield County Public School

When teaching children about global warming and climate justice, what should teachers know about their emotional readiness? How do children perceive global warming and how are these perceptions felt?

From Trade to Research, It's All STEM: Advising Students

Session 3 Room E Grade Level: HS-COL Content: General
Kenneth Chapman, American Chemical Society

Teachers will be given insights into work in the non-academic STEM world, informed of what STEM workers do, and prepared to suggest various pathways for various occupations along the workforce spectrum of STEM. (Not-for-Profit Exhibitor)

The presenter is a chemical engineer with 31 years addressing a wide variety of workforce issues at the ACS and 16 years teaching high school and college science and engineering. He has developed cooperative education curricula, textbooks, and career development programs.

SESSION 4: THURSDAY 8:00PM – 8:45PM

Teaching Science IS Teaching Reading

Session 4 Room A Grade Level: ELEM Content: Literacy in Science
Sandi Reyes, Learning A-Z

Do you struggle to effectively embed creative and collaborative literacy processes into Science instruction? Students need to read grade level complex scientific texts to learn science concepts, while many students do not have the background content knowledge or the foundational reading skills to accomplish this. We will discuss the challenges, how to successfully integrate science and literacy, and how literacy skills and engagement improve when paired with hands-on inquiry-based science. (Commercial Exhibitor)

Tech tools to flip over

Session 4 Room B Grade Level: ALL GRADES Content: General
Alison Dossick, Virginia Commonwealth University
Sue Kirk, Virginia Commonwealth University
Mindy VanDevelder, Virginia Commonwealth University

Learn more about various programs and platforms to help you flip between in-person and at home learning. Explore flippity, symboloo, peardeck, goosechase, and more as you navigate the uncertainties of learning with learning tools that easily switch between school and home.

Virtual Classroom Visits with NASA Scientists

Session 4 Room C Grade Level: ALL GRADES Content: Earth/Space Science, Environmental Science
Angela Rizzi, NASA Langley Research Center

Would you like to have a NASA subject matter expert (SME) connect with your class virtually? Come explore resources to help your students get the most out of the connection. Connections are designed to focus on science topics as well as 21st Century Skills and career awareness objectives. Resources include materials to help students prepare for the visit, activities to do during the visit and resources to facilitate interaction with the SME.

Data Interpretation & Explanation - Scaffolding and Support

Session 4 Room D Grade Level: MS-HS Content: Biology/Life Science, General
Joleen Zackowski, Tidewater Community College

This presentation models a lesson used to teach middle school/general high school students how to interpret data and write scientific explanations of that data. Strategies presented include Claim-Evidence-Reasoning and I-squared (Identify and Interpret). The presentation also explores the use of free internet resources such as HHMI BioInteractive for the purpose of finding authentic data from peer-reviewed journals which students can then analyze

Art of Inquiry in Science with Discovery Education

Session 4 Room E Grade Level: ALL GRADES Content: General
Brad Fountain, Discovery Education

Engage your students to think and act like scientists. Be the teacher that transforms everyday lesson plans into authentic, memorable learning experiences with inquiry-focused instruction. Come with a willingness to inspire learning; leave with strategies and tools to make it happen. (Commercial Exhibitor)

SESSION 5: FRIDAY 4:00PM – 4:45PM

Exclusively for Pre-service Teachers - What YOU Need to Know

Session 5 Room A Grade Level: HS-COL Content: General, Preservice Teachers
Jennifer Maeng, University of Virginia

Calling all pre-service teachers! Join us for and learn how VAST can launch you into your career as a science teacher. Whether this is your first time attending VAST or your third, this session has something for you! Make connections with fellow preservice teachers and others that can support your career whether just you're beginning a teacher preparation program or graduating in May!

Designing STEM Career-based Lessons for the K-5 Classroom

Session 5 Room B Grade Level: ELEM Content: STEM Integration
Courtney Gonzalez-Vega, York County School Division

Melani Loney, Old Dominion University- Center for Educational Partnerships

Fostering awareness of STEM careers in elementary provides students with knowledge that can impact their life beyond the K-12 arena. While most know STEM career awareness is important, how exactly can teachers successfully integrate this with the Virginia SOLs? This workshop will review a sample K-5, STEM career based, inquiry lesson containing a STEM challenge and integrated content. Teachers will have time to design their own integrated lesson using the STEM Lesson Design Template.

Plankton Poop to DNA: Research Translated to K-12 Classrooms

Session 5 Room C Grade Level: MS-HS-COL Content: Biology/Life Science

Sarah Nuss, Chesapeake Bay National Estuarine Research Reserve
Lisa Lawrence, Virginia Institute of Marine Science
Bethany Smith, Virginia Institute of Marine Science

Celia Cackowski, Virginia Institute of Marine Science

Tara Rudo, Chesapeake Bay National Estuarine Research Reserve in Virginia

What can we learn from plankton poop? How can we detect algal blooms by testing DNA in the water? Graduate students at the Virginia Institute of Marine Science have translated their research into hands-on STEM activities for K-12 science classrooms. This session shares inventive activities with real-world connections. Participants receive these lesson plans and have on-line access to 30+ additional lessons at <https://tinyurl.com/VASEA-Lessons>.

Mastering - Digital Platform - AP, Honors Science Offerings

Session 5 Room D Grade Level: HS-COL Content: AP, Honors and Elective Science

Scott Skene, SAVVAS Learning Co.

Come and get registered for Mastering associated with your AP, Honors or Electives Science offerings. Mastering has completely changed how students learn and instructors teach. The Mastering platform delivers engaging, dynamic learning opportunities focused on course objectives and responsive to help students demonstrate real measurable progress. Mastering is proven to help students absorb course materials and understand difficult objectives. (Commercial Exhibitor)

Inspiring NASA's Future Workforce Through STEM Engagement

Session 5 Room E Grade Level: MS-HS Content: Earth/Space Science, Engineering

Rosemary Smith, NASA

NASA is engaging its future workforce through three pilots providing unique learning experiences for students focusing on current NASA missions. Join us as we discuss best practices for integrating STEM concepts and

technology into your classroom, explain what you will need to get started, and immerse you in a NASA journey without ever leaving the classroom!

SESSION 6: FRIDAY 5:00PM – 5:45PM

VDOE Update

Session 6 Room A Grade Level: ALL GRADES Content: General
Anne Petersen, Virginia Department of Education
Myra Thayer, Virginia Department of Education
Gregory MacDougall, Virginia Department of Education

The purpose of this session is to provide all stakeholders an update on current science initiatives within the Virginia Department of Education. Included in these initiatives will be an introduction to the Science Instructional Plans and other resources developed to support the 2018 Science Standards of Learning. Assessment next steps will also be shared in this session.

Computer Science Integration Workshop

Session 6 Room B Grade Level: ALL GRADES Content: Computer Science
Perry Shank, CodeVA
Anita Crowder, CodeVA
Bryan Wallace, CodeVA

The challenge many K-12 educators experience with the addition of the computer science state standards centers around the need to integrate content. This workshop provides an overview on how the CS standards can be integrated into core instruction; defining conceptual strands in CS, defining best practices for integration, and offering pedagogical frameworks for integrated-focused lesson planning. (Not-for-Profit Exhibitor)

Preparing Teacher Candidates for Teaching Equitable Science

Session 6 Room C Grade Level: ALL GRADES Content: General
Joi Merritt, James Madison University
Angela Webb, James Madison University

We aspire to help teacher candidates be aware of the normative practices and identities in their own science classrooms and to work to ensure that these privileged and promoted ways of being a science person are broad and accessible. Our approach is informed by how we, as science teacher educators, might reflect and make visible needed dispositions, beliefs, attitudes and practices in our own teaching to better prepare teacher candidates to teach in equitable and inclusive ways.

Invasive Species - An Opportunity for Project Based Learning

Session 6 Room D Grade Level: MS-HS Content: Biology/Life Science
Scott Skene, SAVVAS Learning Co.
Jackie Orgain, SAVVAS Learning Co.

Invasive species cost Virginia taxpayers over a billion dollars every year! In this workshop, teachers will participate in a real-world PBL where they will investigate an invasive species. Teachers will use the Engineering Design Process to research, plan, design, build and test a solution to reduce the impact of an invasive species on a local ecosystem. (Commercial Exhibitor)

Using Argumentation to Increase Student Voice

Session 6 Room E Grade Level: ALL GRADES Content: General
Pam O'Brien, STEMscopes / Accelerate Learning

Maintain, sustain, and expand a sense of community and citizenship among your students whether they are engaging in science face-to-face in the classroom or remotely from home. Reduce teacher talk and increase purposeful student talk as we model consensus building through argumentation around science topics that matter. ELA skills and the 21st-century skills of communication and collaboration are a must in today's science classroom. (Commercial Exhibitor)

SESSION 7: FRIDAY 7:00PM – 7:45PM

Get involved with JVSE! There is Room for Everyone!

Session 7 Room A Grade Level: ALL GRADES Content: General
Amanda Gonczy, Michigan Technological University
Jennifer Maeng, University of Virginia

Did you know that publishing an article can be used toward teacher re-licensure points? Or that when you review a journal article submission you can include this on your resume as professional service? This session will help all members get involved with VAST's journal by publishing their own work or reviewing submitted manuscripts. Session attendees will brainstorm an idea for an article and work with the journal editors in developing an outline for their own publication.

Ed+gineering: Preparing Elementary Educators in Engineering

Session 7 Room B Grade Level: ELEM Content: Engineering
Kristie Gutierrez, Old Dominion University
Jennifer Kidd, Old Dominion University

ODU preservice teachers and engineering students collaboratively created and shared engineering lessons for 4th and 5th grade students in the Hampton Roads area using the 5E instructional model with emphasis on the engineering design process. In this session students and faculty will provide attendees with digital lesson plans and interactive presentations that meet the revised VA Science SOLs, and guide attendees through a sample engineering lesson for use in upper-elementary classrooms.

Environmental Education Impacts Students' Future Careers

Session 7 Room C Grade Level: ALL GRADES Content: Environmental Science and STEM
Laurie Witt, Albert Harris Elementary School
Krista Hodges, Dan River Basin Association

Today's students enter the classroom with the mindset that they can change their world. Science and STEM teachers have the opportunity to equip students to be environmental stewards while teaching Science Standards of Learning. Learn to create a Green Schoolyard that provides real-world applications for students, as well as meaningful hands-on learning opportunities. Students will enjoy trying on the roles of agricultural scientists, environmentalists, engineers, botanists, and meteorologists.

Get Interactive! : Integrating Science Notebooks

Session 7 Room D Grade Level: MS-HS Content: Biology/Life Science, Chemistry
Bryan Buckalew, Patrick Henry High School
Alice Scheele, Patrick Henry High School

In this session, learn how to integrate interactive notebooks into your science classroom. With a focus on life sciences and chemistry, we will show how to use science notebooks to increase organization, engagement, and retention with your students. Examples will be provided for ALL high school levels. Come and get interactive!

Using Phenomena to Engage Students in Science

Session 7 Room E Grade Level: ALL GRADES Content: General
Brad Fountain, Discovery Education

What is Phenomena and what makes it engaging? By centering science education on phenomena that students are motivated to explain, the focus of learning shifts from learning about a topic to figuring out why or how something happens and connects that learning to the natural world. Explore example phenomena-based lessons as we share resources to get you started on building your own phenomena based science lessons. (Commercial Exhibitor)

SESSION 8: FRIDAY 8:00PM – 8:45PM

College and University Science Educators Share Session

Session 8 Room A Grade Level: HS-COL Content: General, Science Education Faculty
Jennifer Maeng, University of Virginia
Anne Peterson, Virginia Department of Education

This session is an opportunity for college/university-based science educators and other teacher educators to participate in a professional learning community. We'll begin the session with updates from each institution, then Dr. Anne Peterson, from VDOE, will share relevant information from VDOE including opportunities around the Commonwealth and resources that to use with pre-service teachers.

Teach Energy Transformations with Confidence!

Session 8 Room B Grade Level: ALL GRADES Content: Chemistry, Physics/Physical Science
Kimberly Swan, National Energy Education Development Project

Rotate through six hands-on stations to learn about forms of energy & energy transformations! Experiments highlight the science behind daily objects in our lives from how an apple can produce electricity to why a glow stick lights up when cracked, & more. All stations are designed to be easily differentiated for elementary, intermediate, & secondary grade levels. Leave feeling confident to teach energy forms & transformations to your students. (Not-for-Profit Exhibitor)

Student Choice Menus: Tips, Tricks, and Lessons Learned

Session 8 Room C Grade Level: ALL GRADES Content: Environmental Science, General
Hannah Mawyer Barbosa, Henrico High School

The first time I had 100% engagement on content material in my Environmental Science class was when I introduced student choice menus. They're chunky and require planning, but if done well the payoff is huge. Come learn how I changed my classroom's rhythm to empower students and promote engagement.

Math-infused Science: Writing About Data in FRQs and DBQs

Session 8 Room D Grade Level: MS-HS-COL Content: Math in Science, AP and IB Courses
Kristen Dotti, Catalyst Learning Curricula

In this workshop you will discover ways to teach your student to be specific, using the correct terms, in context, as they identify and describe trends in a set of numbers. We will play two graph analysis games useful for building a working vocabulary and increasing student reliance on mathematically accurate communication. This ready-to-use online lesson plan helps your students make claims from a graph that are supported by evidence and reasoning. The activities can be used as an introduction to descriptive mathematics in K-12 or a repeatable method for completing FRQs and DBQs on an AP or IB exam. (Commercial Exhibitor)

Tips & Tricks for Virtual Learning IN OR OUT of the Class

Session 8 Room E Grade Level: ALL GRADES Content: General
Angela Lewis, Norfolk Public Schools
Analisa Santillan, Norfolk Public Schools
Michele Baird, Norfolk Public Schools
Jessica O'Grady, Norfolk Public Schools

In this ever-challenging and ever-changing educational environment, this PD is designed by Instructional Technology Resource Teachers to introduce science teachers to several engaging free virtual learning programs that can be utilized in or out of the science classroom.

SESSION 9: SATURDAY 9:00AM – 9:45AM

Engaging Science with eMediaVA's Free Digital Media

Session 9 Room A Grade Level: ALL GRADES Content: General
Lindsey Horner, eMediaVA

How do you make your content more engaging and relevant to today's digital learners? eMediaVA has you covered. eMediaVA is a free digital content library for Virginia educators, featuring over 150,000 digital learning resources from state and national leaders in educational content. The goal of this session is to share resources available in eMediaVA to successfully integrate digital media into your science lessons to engage learners and make your content relevant to students' experiences. (Not-for-Profit Exhibitor)

The "Real Virginia" VR Map for Earth Science

Session 9 Room C Grade Level: MS-HS Content: Earth/Space Science, Environmental Science
Matt Scott, Douglas Freeman High School

How can you travel 1700 miles and visit the 5 regions of Virginia while staying in your classroom? With Real Virginia project, a hybrid digital/physical map that connects students to Virginia's geography, students can use the digitally augmented map to 'travel' Virginia, view immersive VR videos, and plan their own road trip covering Earth Science SOL topics. Attendees will learn how to use the map in their classroom by printing it out and linking to the free digital resources.

Great Escape: Break Your Everyday MS Science Class Routine

Session 9 Room D Grade Level: MS Content: Earth/Space Science, Physics/Physical Science
Scott Skene, SAVVAS Learning Co.
Jackie Orgain, SAVVAS Learning Co.

Create an engaging classroom for all students by challenging them to an escape room! In this workshop, teachers will actively participate by drawing on each other's strengths and abilities by collaborating, finding clues, deciphering codes and solving puzzles. Escape the session with the tools you need to build your own escape room for your students. (Commercial Exhibitor)

National Geographic Educator Certification

Session 9 Room E Grade Level: ALL GRADES Content: General
LoriAnn Pawlik, Colgan High School, PWCS

This presentation will allow participants to understand the process of certification and the importance of educators to the mission of National Geographic Education. Participants will earn the first phase of certification during this session. It is for both formal and informal educators at all grade levels and in any content area.

SESSION 10: SATURDAY 10:00AM – 10:45AM

VDOE Update

Session 10 Room A Grade Level: ALL GRADES Content: General
Anne Petersen, Virginia Department of Education
Myra Thayer, Virginia Department of Education
Gregory MacDougall, Virginia Department of Education

The purpose of this presentation is to provide all stakeholders an update on current science initiatives within the Virginia Department of Education. Included in these initiatives will be an introduction to the Science Instructional Plans and other resources developed to support the 2018 Science Standards of Learning. Assessment next steps will also be shared in this session.

Evolution for Middle School Educators

Session 10 Room B Grade Level: MS Content: Biology/Life Science
Christopher Moran, The Teacher Institute for Evolutionary Science

Teach evolution with confidence! The presenter will model an entire free unit of instruction.

During the session, we will share: A bell ringer activity, a slide presentation (with content, online games, videos, and active learning ideas), a tour of the TIES Online Learning Page, and an investigation on natural selection. In addition, our website features free monthly webinars and dozens of resources organized by content standard. Check out our website at www.tieseducation.org

Teaching Science in an Online Environment

Session 10 Room C Grade Level: ALL GRADES Content: Earth/Space Science, Environmental Science
Tabatha Zarkauskas, Forest Park High School

In an environment where students may be distance learning, learning science without "doing" can be difficult to do and to understand. Participants will engage in online/hands-on learning activities to help students "do" science in an online environment while allowing students to show their understanding of concepts using DOK, preparing students for the 21st century workforce.

Invasive Species - An Opportunity for Project Based Learning

Session 10 Room D Grade Level: MS-HS Content: Biology/Life Science
Scott Skene, SAVVAS Learning Co.
Jackie Orgain, SAVVAS Learning Co.

Invasive species cost Virginia taxpayers over a billion dollars every year! In this workshop, teachers will participate in a real-world PBL where they will investigate an invasive species. Teachers will use the Engineering Design Process to research, plan, design, build and test a solution to reduce the impact of an invasive species on a local ecosystem. (Commercial Exhibitor)

Zombies Are Knocking on Your Classroom Door!

Session 10 Room E Grade Level: MS-HS Content: Biology/Life Science, General
Jeff Lukens, Texas Instruments
Jamila Gadsden, Texas Instruments

When zombies knock, let them into your classroom and then battle them with STEM strategies! The zombies don't stand a chance.(Commercial Exhibitor)

SESSION 11: SATURDAY NOON – 12:45PM

PAEMST Information Session

Session 11 Room A Grade Level: MS-HS Content: Science, Engineering
Anne Petersen, Virginia Department of Education

The Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST) are the highest honors bestowed by the United States government specifically for K-12 science, technology, engineering, mathematics, and/or computer science teaching. The award recognizes those teachers have both deep content knowledge of the subjects they teach and the ability to motivate and enable students to be successful in those areas. This years award is open to 6-12 teachers.

People and the Biosphere: Hands-on Ecology Lessons

Session 11 Room B Grade Level: MS Content: Biology/Life Science, Environmental Science
Melissa Holmes, Carl Sandburg Middle Schools (FCPS)

In this on-line session, the presenter will lead participants in hands-on activities (demonstrations, simulations and modeling) that engage middle school students in a number of ecology topics including natural resource use, land use, populations, climate change, biodiversity and ecosystem health. She will share techniques for both in-class and distance learning that help students connect the science to their personal experiences and to relevant content in math and social studies.

Muck to Radiocarbon: Research Translated to K-12 Classrooms

Session 11 Room C Grade Level: HS-COL Content: Chemistry, Environmental Science
Lisa Lawrence, Virginia Institute of Marine Science
Sarah Nuss, Chesapeake Bay National Estuarine Research Reserve
Bethany Smith, Virginia Institute of Marine Science

Celia Cackowski, VIMS/SA Sea Grant

Tara Rudo, Chesapeake Bay National Estuarine Research Reserve

How can sediment size inform us about what organisms might live in different parts of the Bay? What can carbon isotope ratios tell us about the land use types impacting an estuary? Graduate students at the Virginia Institute of Marine Science have translated their research into hands-on STEM activities for K-12 science classrooms. This session shares inventive activities with real-world connections. Participants receive these lesson plans and have on-line access to 30+ additional lessons.

Elementary STEM Focus: Curiosity and Deeper Learning

Session 11 Room D Grade Level: ELEM Content: Math in Science, General, Preservice Teachers
Cheryl Lindeman, Randolph College
Sabrina Johnson, Randolph College

How do elementary teachers approach curiosity and deeper learning with their students and their own professional development? We will share our findings highlighting how teachers keep up to date with topics and strategies for assisting elementary students to develop STEM habits of mind. Participants will examine and reflect on learning pathways that support how elementary STEM educators practice continuous improvement. Preservice teachers are encouraged to attend.

PBL and STEM

Session 11 Room E Grade Level: ALL GRADES Content: General
Pam O'Brien, STEMscopes / Accelerate Learning

Are you looking for a way to empower all students in Project-Based Learning (PBL) no matter your learning environment? Join us to discover a simple planning process that engages students in the new Virginia Science Standards while fostering open-ended discovery and authentic learning experiences. Student learning is greatly enhanced by actively engaging in real-world and relevant projects in every type of classroom - from traditional to remote, or a combination thereof. (Commercial Exhibitor)

SESSION 12: SATURDAY 1:00PM – 1:45PM

Nurturing Data Literacy in Your Science Instruction

Session 12 Room A Grade Level: ALL GRADES Content: General
Elizabeth Joyner, NASA Langley Research Center
Patrick Scharf, Biology Teacher, Louisa County Schools

Do you facilitate Problem-Based Learning in your Earth Science, Ecology, or Biology classroom and are looking for new ideas and inspiration? Do you encourage your students to analyze professionally-collected data to solve real-world problems? Do you want to use Earth Systems data in your lesson but you get bogged down by complicated user interfaces and funny naming datasets? Need ideas for engaging students in NASA maps, data, and graphs. Let NASA help!

The Price of Palm Oil: A High School Ecology PBL Unit

Session 12 Room B Grade Level: HS Content: Biology/Life Science
Kristen Conklin, Francis Lewis High School
Tyler St. Clair, Longwood University

In this unit, students use interactive websites, in-class activities, and adapted primary literature to learn about how the palm oil industry affects biodiversity in Malaysia and how they are connected to this issue as consumers in the US. During the presentation, teachers will learn about how to implement the pedagogical strategies used in the unit and receive all materials and resources needed for doing it.

Enhancing Labs Through the Incorporation of Modeling

Session 12 Room D Grade Level: ALL GRADES Content: General
Benjamin Campbell, Longwood University
Kimia Jahangiri, Longwood University

Modeling is one of the NGSS Science and Engineering Practices, yet it is not often explicitly taught when conducting lab activities. In this session, you will learn how to evaluate written lab plans for their inclusion of modeling practices. Then, we'll practice making adjustments to labs so that they include models in such forms as diagrams, analogies, and mathematical formulations. Perfect for all grades and subject areas.

Engaging Students in Authentic Science Experiences

Session 12 Room E Grade Level: ALL GRADES Content: General
Brad Fountain, Discovery Education

In a student-centered learning environment, we want students to ask deep, meaningful questions, collaborate with their peers, arrive at meaningful conclusions and solve real world problems. Join us to learn about a variety of digital resources and instructional strategies to engage all students in authentic science experiences. (Commercial Exhibitor)

SESSION 13: SATURDAY 2:00PM – 2:45PM

The Science Language Arts

Session 13 Room A Grade Level: MS-HS Content: General
Janet Lundin, Mary Ellen Henderson Middle School

Science has its own language and in order for students to succeed in science they have to learn the language. For example; for 8th grade science SOL students are expected to have an essential vocabulary of 155 terms. This session will focus on strategies that will help students to gain mastery of science vocabulary. Sharing of strategies is welcomed and encouraged.

Citizen science for teaching, learning and research

Session 13 Room B Grade Level: ALL GRADES Content: Biology/Life Science, Environmental Science
Sujan Henkanathgedara, Longwood University

Citizen science is citizen volunteers actively being involved in scientific research. These programs share lesson plans and rich data online and anyone can use this data to teach and learn scientific inquiry, and conduct scientific research. This workshop will introduce you to citizen science, explain how you can join as a volunteer, and discuss how you can teach, learn and do publishable research with these programs.

Meet VESTA, the Virginia Earth Science Teacher Association

Session 13 Room C Grade Level: ALL GRADES Content: Earth/Space Science, Environmental Science
David Matchen, Madison County High School
Bonnie Keller,

Meet with the Officers from VESTA and find out how you can participate in building an association of Earth Science Teachers. All are welcome. We will discuss just how we can support the teaching of Earth Science in Virginia, including the development of a summer field course in Virginia, coordination and organization of online teaching materials, the development of a guide to assist new Earth Science Teachers. Attend and find out how you can contribute.

Speed Dating Apps in the Science Classroom

Session 13 Room D Grade Level: ALL GRADES Content: General

Michele Baird, Norfolk Public Schools

Ana Santillan, Norfolk Public Schools

Angela Lewis, Norfolk Public Schools

Jessica O Grady, Norfolk Public Schools

Come learn about 5 fantastic apps you can use in your science classroom. Engage your students, enhance your lessons, and make learning fun! Spend a few minutes learning about the apps and spend of the rest of the session DOING them!

Keeping It Real: Creating a More Authentic Science Classroom

Session 13 Room E Grade Level: MS Content: General

Shari Rosenberg, Matoaca Middle School

Have you thought about trying to make science more connected to the "real world" but could use some more ideas? Attend this session to learn how to create a "science speaker series" in your classroom (in person or virtually) as well as some other strategies for making science more meaningful and relevant to today's learners.