

Live Presentations
Virginia Association of Science Teachers
2021 VIRTUAL PROFESSIONAL DEVELOPMENT INSTITUTE
NOVEMBER 16-18
Live Presentations

Green Schoolyards Enable Students to Become Problem Solvers

Laurie Witt, Albert Harris Elementary School

Krista Hodges, Dan River Basin Association

Elementary students can learn the science necessary to address global problems. We have created the Green Schoolyard concept where students join action with learning. With a Monarch Butterfly Waystation, rain barrels, compost bins and a tasting garden, K-5 students experience being part of the solution to problems ranging from growing water shortages, decreasing bee populations, to increasing food insecurities. The Green Schoolyard provides hands-on opportunities to teach Virginia Science SOL.

Grade Level: ALL GRADES Main Content: Environmental Science, STEM

Day and Time: Tuesday Session 1: 4:00pm-4:45pm Virtual Room A

Evaluating and Teaching Spatial Reasoning

David Matchen, Madison County High School

Spatial reasoning is vital to understanding modern issues in Geoscience, yet spatial reasoning is difficult to teach, and evaluate. To evaluate the spatial reasoning ability in my Environmental Science classes, I use a short text article with geographic information and require my classes to draw a map based upon what they have read. In this session, I will provide a shortened version of that exercise and ask the group to construct their own maps.

Grade Level: ALL GRADES Main Content: Earth/Space Science, Environmental Science

Day and Time: Tuesday Session 1: 4:00pm-4:45pm Virtual Room B

Spreadsheets Aren't Only for Accountants: They're for STEM!

Amanda Gonczi, Michigan Technological University

Jennifer Maeng, University of Virginia

In this session you will learn how spreadsheets can enhance your STEM instruction and strengthen students' STEM skills. We will model a lesson that takes advantage of spreadsheets for data collection and analysis. You will learn how spreadsheets can facilitate student engagement in science, engineering, and mathematics. Participants will work in small groups to brainstorm how to integrate spreadsheets into an existing lesson and will share these with the larger group.

Grade Level: ELEM Main Content: STEM

Day and Time: Wednesday Session 1: 4:00pm-4:45pm Virtual Room C

Interdisciplinary Planning: IDM Meets Science!

Jessa Campbell, Greer Elementary School

Incorporating science throughout the day from morning meeting, math, literacy, and the content block. Using local resources in your community to support science learning.

Grade Level: ELEM Main Content: Interdisciplinary Approach

Day and Time: Tuesday Session 1: 4:00pm-4:45pm Virtual Room D

NASA's X-57 Maxwell & Advanced Air Mobility

Anne Weiss, NASA Langley Research Center Office of STEM Engagement

With attention on the Commercial Crew Program and Perseverance rover, it might be easy to forget the first "A" in NASA. However, our engineers are creating new experimental planes that build upon the storied legacies of the X-1 and X-15. With breakthroughs in electric power technology, NASA is working towards a sustainable, more inclusive aviation future. In this session, we'll explore the X-57 and advanced air mobility vehicles...more ways that, "NASA is with you when you fly."

Grade Level: MS-HS-COL Main Content: Physics/Physical Science, Engineering

Day and Time: Tuesday Session 1: 4:00pm-4:45pm Virtual Room E

Blending the 5E: An Innovative Approach to Student Inquiry

Jacquelyn Calder, Mechanicsville High School

Cierra Coyner, Mechanicsville High School

Science teachers embrace the 5E lesson format because of its focus on inquiry. 5E can be integrated into a blended learning classroom to enhance student inquiry. Blended learning is a pedagogical approach where students have some control over path, pace and place. When the two are used together, students become active learners, while teachers become learning facilitators. This session will showcase example lessons of the 5E blended approach.

Grade Level: MS-HS Main Content: General

Day and Time: Tuesday Session 1: 4:00pm-4:45pm Virtual Room F

Using Environmental Cartoons as Conversation Starters

Richard Groover, Hanover Films & Communications

This program will demonstrate how cartoons can be an educational resource for teachers to engage student learning and create memorable knowledge.

Grade Level: ALL GRADES Main Content: Biology/Life Science, Environmental Science, Cartoons Can Stimulate Students

Day and Time: Tuesday Session 1: 4:00pm-4:45pm Virtual Room G

Teaching Human Ecology with Models and Simulations

Rafael Woldeab, Population Education

Discover activities that use models and simulations to help students understand ecological concepts and cause-and-effect relationships in nature, including how human activities can change the physical landscape, affect ecosystems on land and in water, and alter the atmosphere. Demonstrations and interactive digital tools engage learners in the creation of 3-D representations of global land use, modeling amounts and sources of fresh water, simulating world population growth trends, and more.

Grade Level: MS Main Content: Earth/Space Science, Biology/Life Science, Environmental Science

Day and Time: Tuesday Session 2: 5:00pm-5:45pm Virtual Room A

New Tools and Content in eMediaVA for Science Educators!

Lindsey Horner, eMediaVA | WHRO Public Media

The goal of this session is to introduce you to the redesigned eMediaVA, with new easy-to-use features like LMS embedding and teacher-created collections. Educators will leave the session with ready-to-use digital media like videos, simulations, and interactives for science learners of all ages, as well as strategies educators can utilize to successfully integrate digital media into lessons to both engage learners and make content relevant to student's lives and experiences.

Grade Level: ALL GRADES Main Content: Earth/Space Science, Biology/Life Science, Environmental Science

Day and Time: Tuesday Session 2: 5:00pm-5:45pm Virtual Room B

Engage Students With Books About Women Who Defy the STEM Gap

Melissa Reif, Booksource

Diane Garavaglia, Booksource

Tony Haney, Booksource

We will explore the use of authentic literature to enhance science lessons with high interest, STEM related trade books with an emphasis on the accomplishments of women and minorities. Our discussion will include a book talk with select books across all grade bands that will elevate your students' interest in science!

Grade Level: ALL GRADES Main Content: General, STEM

Day and Time: Tuesday Session 2: 5:00pm-5:45pm Virtual Room C

Explore Smithsonian Science: Investigating Freshwater (1)

Cheryl Lindeman, Retired STEM teacher educator

Knans Griffing, Smithsonian/Carolina

Our live workshop will explore the Smithsonian Science for the Classroom™ module, How Can We Provide Freshwater to Those in Need? Teachers will experience how engineering design, phenomena, and investigative

science raise the bar for students solving for real-world problems. Using resources from the Smithsonian, this module scaffolds NGSS 3D collaborative systems thinking. Post workshop materials will be shipped for those interested.

Grade Level: ELEM Main Content: Environmental Science, Engineering, STEM
Day and Time: Tuesday Session 2: 5:00pm-5:45pm Virtual Room D

The Art & Science of NASA's James Webb Space Telescope

Anne Weiss, NASA Langley Research Center Office of STEM Engagement
NASA, along with the European and Canadian Space Agencies, is now preparing the James Webb Space Telescope (JWST) for launch no earlier than November 2021. From its Lagrange (L2) vantage point one million miles away from Earth, the JWST promises to re-define humanity's perspectives of our Universe's history...from the Big Bang to birth of our Solar System. In this session, we'll combine space science with art to create an interdisciplinary cosmic connection that inspires your students.

Grade Level: ALL GRADES Main Content: Earth/Space Science, Arts/STE(A)M
Day and Time: Tuesday Session 2: 5:00pm-5:45pm Virtual Room E

Favorite Physics Demonstrations

Tony Wayne, Albemarle High School

Physics teachers in the Virginia Instructors of Physics, with decades of experience, will share with you some of their favorite demonstrations -both new and old. Many will use materials found at hardware stores, eBay, and/or Amazon. Descriptions and instructions will be provided.

Grade Level: MS-HS-COL Main Content: Physics/Physical Science
Day and Time: Tuesday Session 2: 5:00pm-5:45pm Virtual Room F

Science and Literacy: Refining Sense Making Skills?

Eeman Salem, Chesterfield County Public Schools

To prepare the next generation of scientists and critical thinkers, we need to combine what we know about excellent literacy instruction with what we know about excellent science instruction. The benefits of this session is to develop students ways of thinking to better understand science ideas for reading and writing that are essential to the science discipline in refining sense making skills.

Grade Level: ALL GRADES Main Content: Biology/Life Science
Day and Time: Tuesday Session 2: 5:00pm-5:45pm Virtual Room G

VA STEM: Inspiration through Integration

Chuck English, Science Museum of Virginia

Virginia STEM continues to evolve. There are many great programs in the Commonwealth, but less in terms of collaborative efforts in STEM Education. The VA STEM Education Advisory Board is helping align STEM programming to create a more unified vision and collective impact in Virginia's STEM Education. There are various models of how schools implement STEM. What can we do as educators and leaders to ensure the most equitable access to this deeper learning opportunity for all youth?

Grade Level: ALL GRADES Main Content: General, STEM
Day and Time: Tuesday Session 2: 5:00pm-5:45pm Virtual Room H

GIS 101: Helping Students Become Map Producers

Matthew Scott, Freeman High School

Students are constantly bombarded with packaged lessons and teacher-made products. Turn your classroom around by putting them in charge! Learn how to help students make Story Maps, collect data to create public information maps, and create their own personal GIS projects for science. You'll also get started setting up free professional-level GIS resources for your school.

Grade Level: HS Main Content: Earth/Space Science, Environmental Science, STEM
Day and Time: Tuesday Session 3: 7:00pm-7:45pm Virtual Room A

Using Real-World Phenomena to Engage Students in Science

Brad Fountain, Discovery Education

John David Son, Discovery Education

By introducing science concepts through real-world phenomena we help students experience the world the way scientist do, which is through asking questions and working toward solutions. We will explore real-world phenomena as it relates to challenges facing our world today and experience how having our students serve as lead scientist in our classrooms opens the door for them to be solution seekers.

Grade Level: ALL GRADES Main Content: General

Day and Time: Tuesday Session 3: 7:00pm-7:45pm Virtual Room B

I'm Fixin' to Simulate That: Simulations Make Science Stick!

Jenna Mercury, ExploreLearning

Everyday events make us wonder. Some events are easily explained, while others cannot. When these events are examined and tested through virtual simulations, they give students an opportunity to think. Why do some objects float and others sink? What is the difference between a solar eclipse and a lunar eclipse and how often does that happen? Learn how to use virtual simulations to help K-5 students dig deeper and get inspired by science and STEM phenomenon!

Grade Level: ELEM Main Content: General

Day and Time: Tuesday Session 3: 7:00pm-7:45pm Virtual Room C

Using the Leafs as a Basis for Student Ownership in Learning

Anne Petersen, Virginia Department of Education

Myra Thayer, Virginia Department of Education

Gregory MacDougall, Virginia Department of Education

Leafs are used in the 2018 Science Curriculum Framework to indicate that students are to use the Scientific and Engineering Practices to support the development of science conceptual understanding. Learn how to effectively integrate opportunities for students to "do science" as they meet the expectations of the 2018 Science Standards of Learning.

Grade Level: ALL GRADES Main Content: General

Day and Time: Tuesday Session 3: 7:00pm-7:45pm Virtual Room D

NASA Digital Badging Resources for Educators & Students

Anne Weiss, NASA Langley Research Center Office of STEM Engagement

For more than a year, lockdown measures in response to the global COVID-19 pandemic drastically altered how we interacted socially, economically and academically with each other. This session provides an overview of online NASA instructional resources, such as digital badges, that combine STEM content, mission assets (e.g., Orion spacecraft), and hands-on activities (with options to include social justice elements) for use in face-to-face, blended or virtual learning environments.

Grade Level: ALL GRADES Main Content: General

Day and Time: Tuesday Session 3: 7:00pm-7:45pm Virtual Room E

Practical Physics Pedagogy

Tony Wayne, Albemarle High School

The Virginia Instructors of Physics, (V.I.P.) will pool decades of experience in the classroom to share what works in the science classroom. How do you focus students when entering the room, do labs, present demonstrations, group your students, and/or check for understanding? We will provide a plethora of proven practiced methods to answer these questions. Bring your ideas to share because we love discussions.

Grade Level: MS-HS-COL Main Content: Physics/Physical Science

Day and Time: Tuesday Session 3: 7:00pm-7:45pm Virtual Room F

Teaching Evolution Virtually or In-Person

Bertha Vazquez, The Teacher Institute for Evolutionary Science

The Teacher Institute for Evolutionary Science has FREE student-guided evolution units to cover your middle school evolution content standards in person or virtually. The units include: 1. The slideshow with embedded online games, hands-on activities, engaging videos, and interactive websites. 2. The student response sheet 3. The answer key and rubric 4. The final assessment and answer key.

www.tieseducation.org is your one-stop shop for evolution education!!

Grade Level: MS-HS Main Content: Biology/Life Science

Day and Time: Tuesday Session 3: 7:00pm-7:45pm Virtual Room G

Enlarging Projects in a Model STEM System

Kenneth Chapman, American Chemical Society volunteer

Projects are a major constituent of a Model STEM System based on more than 50 years of teaching STEM content at high school and college levels and observing attempts at improving high school STEM education through national-level efforts by federal agencies and STEM membership organizations. This presentation will briefly describe the Model STEM System and emphasize elements of projects that may be new or not considered by most teachers.

Grade Level: HS-COL Main Content: STEM

Day and Time: Tuesday Session 3: 7:00pm-7:45pm Virtual Room H

The Importance of Mentoring Teachers

Myron Blosser, Harrisonburg High School

Erich Sneller, Harrisonburg High School

Are you an educator that has won awards for your teaching? Are you a teacher or administrator interested in improving instruction in your school? Hear stories of mentoring from school leaders, teachers and preservice teachers and share your ideas on how to encourage and support others in your school. Presentation will include the importance of mentoring, and ask for the exchange of ideas and examples of mentoring.

Grade Level: ALL GRADES Main Content: General

Day and Time: Tuesday Session 4: 8:00pm-8:45pm Virtual Room A

From Seed To Harvest: Cultivating CRE & Academic Liberation

LaNika Barnes, Albemarle High School/Albemarle County Public Schools

Remember when learning new things was not a requirement but just a part of life that brought joy and connection to the world around you? Or maybe you discovered later in life that we "do science" all the time? If you answered "Yes" to either of these questions, join me to discuss how we can effectively partner with colleagues, students, & families to plant culturally responsive & responsible learning seeds, in the realm of science education, in order to cultivate lasting academic liberation.

Grade Level: ALL GRADES Main Content: Culturally Responsible Ed

Day and Time: Tuesday Session 4: 8:00pm-8:45pm Virtual Room B

Improving Critical Thinking Skills with Virtual STEM Cases!

Jenna Mercury, ExploreLearning

We need to provide our students with more in-depth, practical, concepts and practices to promote STEM career-readiness. Interactive STEM Cases will empower our students to jump into the role of a real STEM professional tasked to solve real-world problems. Participants will view interactive case studies, form and test ideas and find solutions. BYOD with any browser to jump into the program too!

Grade Level: MS-HS-COL Main Content: STEM

Day and Time: Tuesday Session 4: 8:00pm-8:45pm Virtual Room C

Climate Change and the 2018 Science Standards of Learning

Anne Petersen, Virginia Department of Education

Myra Thayer, Virginia Department of Education

Gregory MacDougall, Virginia Department of Education

Climate change is a hot topic in today's news and many opinions exist as to whether human actions directly impact the climate of the planet. This session will focus on providing opportunities for students to analyze evidence of the

key indicators of climate change, to engage in discourse using the evidence, and develop their understanding of climate change.

Grade Level: ALL GRADES Main Content: Earth/Space Science, Biology/Life Science, Environmental Science
Day and Time: Tuesday Session 4: 8:00pm-8:45pm Virtual Room D

Adapting to the New Normal: What Has the Pandemic Taught Us?

George Dewey, Fairfax County Public Schools, retired

We all have had many questions about what our school's "new normal" might look like and how we adapt to it. Join us for an informal discussion where we share major successes and concerns: *What has the past year taught me? *What has worked well? *What has not worked so well? *What support do we need moving forward? *Successes and issues with remote, hybrid, and in-person learning? *How best to conduct lab work? Please email me in advance with any issues you want discussed: gtdewey3@outlook.com.

Grade Level: ALL GRADES Main Content: General
Day and Time: Tuesday Session 4: 8:00pm-8:45pm Virtual Room E

Virginia Instructors of Physics - Share and Organizational

Andrew Jackson, Harrisonburg City Public Schools

Tony Wayne, Albemarle County Public Schools

A virtual meeting of the Virginia Instructors of Physics. We are an organization of and for physics teachers. We share lessons, labs, demonstrations, and pedagogy related to physics teaching at the physical science, physics, and college level.

Grade Level: MS-HS-COL Main Content: Physics/Physical Science
Day and Time: Tuesday Session 4: 8:00pm-8:45pm Virtual Room F

Sketching Science in Biology Classrooms

Emma Arents-Quagliano, Henrico County Public Schools, Henrico High School

With its reliance on systems-level understanding, students may find the biology curriculum intimidating. One of the greatest challenges of biology teaching for me has been the encouragement of students' model-based reasoning skills. This presentation will highlight drawing to learn techniques that have proven successful in the elicitation of higher-order thinking skills during my first year of teaching.

Grade Level: HS-COL Main Content: Biology/Life Science
Day and Time: Tuesday Session 4: 8:00pm-8:45pm Virtual Room G

Coffee Chat with the Content Chairs

Stephanie Harry, VAST Chemistry Content Chair

David Matchen, VAST Earth Science Content Chair

Tony Wayne, VAST Physics Content Chair

Jessica Jasmine White, VAST Biology Content Chair

The goal of the VAST Content Chairs is to ensure all science teachers know they are not alone. We want to strengthen science community and we plan to do this content by content. Please join the VAST Content Chairs and let's have a discussion on how we can assist you to achieve your goals as a science educator.

Grade Level: ALL GRADES Main Content: General
Day and Time: Tuesday Session 4: 8:00pm-8:45pm Virtual Room H

Do You Mentor Students in Research for Competitions?

Heather Overkamp, I.C. Norcom High School/Portsmouth Public Schools

If you mentor students in research for competitions such as eCybermission, VJAS, JSJS, Broadcom, Regeneron, or ISEF qualifiers, join me for a conversation about how we can form a cohort to support each other. I have written grants and been a part of programs that support teachers financially and with professional development. I also know of other competitions that may be a good stepping stone for your students to level up to more challenging and competitive science and engineering symposia.

Grade Level: MS-HS-COL Main Content: Any Subjects: Research

Day and Time: Wednesday Session 5: 4:00pm-4:45pm Virtual Room A

Five Minute Creations

Shannon Crawford, Virginia Virtual Academy at K12

What could you create in five minutes, that could help solve a problem, using everyday objects found around your home? Join me as we explore a five-minute engaging STEM activity. We will be finding, developing, and sharing our creations as a group. I always close my live class sessions by providing students with three everyday objects. I allow them to assume we have tape, scissors, string, and glue. They have five minutes to create a useful new product and share with our class.

Grade Level: ELEM-MS Main Content: STEM

Day and Time: Wednesday Session 5: 4:00pm-4:45pm Virtual Room B

Give Them Something to Talk About!

Jacqueline Orgain, Savvas Learning

Students may be talking, but are they talking about science? Foundational communication skills in writing, speaking, and discourse in the context of science and engineering is essential for your students' success. Scientists and engineers collaborate while designing solutions, solving problems, presenting ideas, and providing meaningful feedback. Take home strategies and tools to get the most out of your students in their presentations and stimulate healthy conversations.

Grade Level: ELEM-MS Main Content: General, STEM

Day and Time: Wednesday Session 5: 4:00pm-4:45pm Virtual Room C

Science "FUN"damentals

Kristen Boudreau, Prospect Heights Middle School

Do you want to engage your middle school science students? The presenter will share with you ideas gathered from 20 years of teaching middle school science such as PBL projects, learning menus, stories, demonstrations, activities, songs, and yes even costumes! Because when science is real and exciting students not only remember facts better but they want to inquire more!

Grade Level: MS Main Content: General

Day and Time: Wednesday Session 5: 4:00pm-4:45pm Virtual Room D

RAD Science (Resources and Data Science)

LoriAnn Pawlik, Prince William County Schools- Colgan High School

Interested in using real-world data or finding abundant resources for your classroom? This session will share lessons and activities that you may not know about to help spark your science teaching. Better yet, design integrated content lesson around your science!

Grade Level: ALL GRADES Main Content: Earth/Space Science, Environmental Science, Physics/Physical Science

Day and Time: Wednesday Session 5: 4:00pm-4:45pm Virtual Room E

Ooh's & Aah's of Energy Transformations!

Kimberly Swan, National Energy Education Development Project

Explore six, hands-on stations: motion, sound, thermal, radiant, electrical and chemical energy! Using items encountered in our daily lives – glow sticks, hand warmers, batteries, etc. – but often have little understanding of the science behind how they work. Leave feeling confident to teach energy forms & transformations to your students. Receive resources and creative ideas for teaching energy concepts correlated to Virginia state standards.

Grade Level: ALL GRADES Main Content: Chemistry, Physics/Physical Science, General

Day and Time: Wednesday Session 5: 4:00pm-4:45pm Virtual Room F

Re Imagining School Education

Cindy Duncan, Education Consultant

How do we provide school environments that are restorative places to heal, commune and nurture academic achievement, citizenship, stewardship, and compassion?

2020 was a year of challenges and opportunities for the everchanging American Education system. We no longer will attend schools that look like they have since the industrial revolution. See positive initiatives and opportunities in education that will IMPACT & ENHANCE the educational system in this country and possibly the world.

Grade Level: ALL GRADES Main Content: Social Emotional Learning
Day and Time: Wednesday Session 5: 4:00pm-4:45pm Virtual Room G

Oceanography Blended Learning Lab Activities

Paula Irwin, Unity Reed High School/ Prince William County Schools

I have converted some "typical" Oceanography lab activities to online versions that students can do in person in class, synchronous online or asynchronous. They are great because they are all environmentally friendly - no paperwork - all electronic. There will be some Excel graphing and Google My Maps activities that you will learn.

Grade Level: HS Main Content: Oceanography
Day and Time: Wednesday Session 5: 4:00pm-4:45pm Virtual Room H

Student Goals: The Classroom Compass

Erich Sneller, Harrisonburg City Public Schools

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 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 embolden your mission as an educator.

Grade Level: ALL GRADES Main Content: General
Day and Time: Wednesday Session 6: 5:00pm-5:45pm Virtual Room A

Rock of Ages: Geologic Maps and the Stories They Tell

Chris Kaznosky, Central High School (Shenandoah County)

Steve Leslie, James Madison University

Ever have a student bring you a rock and ask what is it? Well, now is your time to learn how to be their hero and more. In this session, you'll experience how to use free geologic maps and government resources to identify what's in your backyard and beyond as well as how each can be used to instruct concepts such as geologic history, rocks, soil, tectonics, and the story behind your local landscape. Resources and sample lessons will be provided including ones correlated with hands-on labs.

Grade Level: ALL GRADES Main Content: Earth/Space Science, Environmental Science
Day and Time: Wednesday Session 6: 5:00pm-5:45pm Virtual Room B

The Challenge is On: Using Engineering in Chemistry

Jacqueline Orgain, Savvas Learning

The challenge is on! Join chemistry teachers for an engaging, hands-on session as we explore the ways open inquiry and engineering and design challenges can be used within a chemistry program to support language development and deepen conceptual understanding for your diverse learners. The session will support teachers in the implementation of Scientific and Engineering Practices and offer suggestions for celebrating and meeting the needs of the diverse learners in their classroom.

Grade Level: MS-HS Main Content: Chemistry, Engineering
Day and Time: Wednesday Session 6: 5:00pm-5:45pm Virtual Room C

Inquiry Training for Preservice teachers: Virtual Water 3-6

Cheryl Lindeman, retired STEM teacher educator

Sabrina Johnson, Randolph College

Taylor Murphy, Randolph College

We will share our 45-minute virtual inquiry lab experiences for Randolph College's 2021 virtual Science Festival and an afterschool face to face program. As preservice teachers planned the lab based on the Smithsonian Science for the Classroom™ module, How Can We Provide Freshwater to Those in Need, it became evident that inquiry labs

are vigorous. The “wizards” facilitated a virtual PBL challenge with a Google slide deck. The afterschool program revealed the true essence of inquiry teaching.

Grade Level: ELEM Main Content: STEM Preservice Virtual
Day and Time: Wednesday Session 6: 5:00pm-5:45pm Virtual Room D

Get Your Game On: Student Engagement and Science Learning

Joselyn Whetzel, Legends of Learning

Experience how SOL-aligned gaming increases science test scores and student engagement. Learn science and math by flying helicopters, building ecosystems and LAUNCHING COWS into outer space! Participants will have hands-on fun and learn how to: make lessons fun while encouraging students to take personal responsibility for their education, personalize student learning based on their academic level, and create an equitable learning environment where students can progress at their own rate.

Grade Level: ELEM-MS Main Content: Math in Science, General, STEM
Day and Time: Wednesday Session 6: 5:00pm-5:45pm Virtual Room E

Illuminate Your Classroom with Solar Energy!

Kimberly Swan, National Energy Education Development Project

Most of the energy on Earth originates from radiant energy emitted by the sun. Explore hands-on activities for students to visualize just how solar energy can be used in many different ways. Investigate with UV beads, build a solar oven, and see how photovoltaic (PV) cells work! Activities align with state standards and contains hands-on inquiry investigations to explore how we use the sun’s energy to produce heat, light, and electricity.

Grade Level: MS-HS Main Content: Physics/Physical Science, General
Day and Time: Wednesday Session 6: 5:00pm-5:45pm Virtual Room F

Chesapeake Bay Foundation Programs Supporting Virginia

Cindy Duncan, Chesapeake Bay Foundation

The Chesapeake Bay Foundation's program have supported VA teachers and students for over 35 years. The immersive hands-on field investigations provided by CBF can enhance all the learning that happens virtually or in person in any subject discipline. Come see all the opportunities offered to assist teachers in and out of the classroom.

Grade Level: ALL GRADES Main Content: General
Day and Time: Wednesday Session 6: 5:00pm-5:45pm Virtual Room G

Google My Maps in the Science Classroom

Paula Irwin, Unity Reed High School/Prince William County Schools

Come learn how to incorporate Google My Maps into your Science classroom. Google My Maps is so versatile. It can be used for individual lab activities or group activities.

Grade Level: ALL GRADES Main Content: General
Day and Time: Wednesday Session 6: 5:00pm-5:45pm Virtual Room H

Supporting Science Teachers During and After COVID-19

Angela Webb, James Madison University

Robbie Higdon, James Madison University

Kerry Cresawn, James Madison University

Supporting teachers is crucial, especially during these uncharted pandemic times. In this session, we will share the ways in which the JMU Robert Noyce Teacher Scholarship Program supported preservice and novice science teachers during the pandemic and how we will continue to be responsive in our support as teachers and schools return to a semblance of pre-pandemic ‘normal’. This presentation will be of interest to science teacher educators, division and school leaders, and professional developers.

Grade Level: ALL GRADES Main Content: Science Teacher Development
Day and Time: Wednesday Session 7: 7:00pm-7:45pm Virtual Room B

Ensuring Access & Equity for All: It isn't Rocket Science!

Jacqueline Orgain, Savvas Learning

Take on the role of a consultant for NASA to design a system to model a rocket launcher. This challenge will highlight tools to support Gender Equity, Economically Disadvantaged Youth, English Learners, Students with Disabilities, and Advanced and Gifted Learners. Participants can immediately implement strategies with their students by using the workshop resources suggested and great take-aways. This really is rocket science but ensuring access and equity doesn't have to be.

Grade Level: ALL GRADES Main Content: Earth/Space Science, Engineering, STEM

Day and Time: Wednesday Session 7: 7:00pm-7:45pm Virtual Room C

VDOE Update

Anne Petersen, Virginia Department of Education

Myra Thayer, Virginia Department of Education

Gregory MacDougall, Virginia Department of Education

The VDOE Update session is intended to provide teachers updates on current state and national science initiatives as well as to inform educators of new instructional resources and professional development opportunities. Time will also be built in for Q&A with the VDOE Science Instruction Team.

Grade Level: ALL GRADES Main Content: General

Day and Time: Wednesday Session 7: 7:00pm-7:45pm Virtual Room D

Coding in a STEM Classroom: It is More Than Just Gaming!

Michelle Plunkett, Riverside High School

Anything from robots, making a calculator, making a simulation, to keeping a lab notebook! Coding is becoming the language of science in modern jobs. This presentation will go over coding from kindergarten all the way up to AP science courses in high school. There will be multiple platforms, a resource bank for future exploration, and tons of time for questions or help.

Grade Level: ALL GRADES Main Content: Math in Science, General, STEM

Day and Time: Wednesday Session 7: 7:00pm-7:45pm Virtual Room E

Wind Can Do Work!

Kimberly Swan, National Energy Education Development Project

With an increased focus on engineering and design instruction, teachers are looking for activities that incorporate these concepts into their curriculum. Join in on our hands-on, critical thinking challenges designed for students to work as engineers in a competitive setting! Build an anemometer and a windmill to see just how wind can do work. Activities designed for students to analyze and interpret data, construct explanations and design solutions, and to plan and carry out investigations.

Grade Level: MS-HS Main Content: Physics/Physical Science, General, STEM

Day and Time: Wednesday Session 7: 7:00pm-7:45pm Virtual Room F

Marsh to Lobster Eggs: Research Translated to K-12 Classrooms

Tara Rudo, Chesapeake Bay National Estuarine Research Reserve-Virginia

Sarah Nuss, Chesapeake Bay National Estuarine Research Reserve-Virginia

Lisa Lawrence, Virginia Institute of Marine Science

Celia Cackowski, Virginia Institute of Marine Science

What can we learn from marsh accretion? How does temperature affect lobster egg development? 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>.

Grade Level: ALL GRADES Main Content: Biology/Life Science, Environmental Science, Physics/Physical Science

Day and Time: Wednesday Session 7: 7:00pm-7:45pm Virtual Room G

Capital Science

Carolyn Elliott, Goochland Middle School/VAST Region 1 Director

Whether virtual or in-person, a visit to Richmond Metropolitan Area (Region1) offers teachers and students a wide variety of opportunities to enrich their science knowledge. This presentation will provide an overview of science sites that offer educational opportunities in Region One.

Grade Level: ALL GRADES Main Content: All Science Disciplines

Day and Time: Wednesday Session 7: 7:00pm-7:45pm Virtual Room H

Enhancing the Science Learning Environment with Mathematics

Kianga Thomas, Norfolk State University

Opel Jones, Towson University

This presentation will focus on how teachers can use mathematics concepts to enhance the teaching of science concepts, the scientific investigation process and basic experimentation exercises in the classroom. Attention will be given towards differentiating instruction to maximize learning for all learners, to include students with disabilities, English language learners and high ability learners. In addition, strategies for student-centered learning will be provided during the session.

Grade Level: ALL GRADES Main Content: Math in Science

Day and Time: Wednesday Session 8: 8:00pm-8:45pm Virtual Room B

Geology, Geothermal Energy, & Geography - Exploring Iceland

Jennifer Burgin, Hoffman-Boston Elementary School/Arlington Public Schools & Virginia Geographic Alliance

Becky Schnekser, Expedition Schnekser & Virginia Geographic Alliance

Iceland is a place with unique geology, geothermal energy, and geography and your learners deserve to travel there, virtually or IRL! Join us to learn how using Iceland in your teaching practice will instill a sense of exploration, curiosity and excitement with learners of all ages. Attendees will leave with lesson inspiration, time for collaboration AND information on GeoCamp Iceland and how VA educators can apply for a scholarship to go on their own Icelandic Expedition!

Grade Level: ALL GRADES Main Content: Earth/Space Science, Biology/Life Science, Environmental Science

Day and Time: Wednesday Session 8: 8:00pm-8:45pm Virtual Room C

PAEMST Information Session

Anne Petersen, Virginia Department of Education

Myra Thayer, Virginia Department of Education

Gregory MacDougall, Virginia Department of Education

The Presidential Award of Excellence of Science and Mathematics Teachers (PAEMST)

is regarded as the nation's top honor for math and science teachers. This award recognizes educators who develop and implement high-quality instructional programs that improve student learning in mathematics and science. This session will provide information and guidance concerning the PAEMST application process.

Grade Level: ELEM-MS Main Content: K-6 Science, CS, Eng, and Math

Day and Time: Wednesday Session 8: 8:00pm-8:45pm Virtual Room D

Invention STEM: Giving the Chance to be Innovative in High School

Michelle Plunkett, Riverside High School

Students have opportunities to demonstrate the 5C's but do not often get a chance to demonstrate citizenship in advanced science courses. This presentation will go through how to switch up your labs to have students develop and practice skills that build to letting them be prepared to enter undergraduate research, invention competitions, or generally changing the world in STEM.

Grade Level: HS-COL Main Content: Engineering, General, STEM

Day and Time: Wednesday Session 8: 8:00pm-8:45pm Virtual Room E

Project Based Learning in the Science Classroom

Kiara Thompson, Thomas C. Boushall Middle School (Richmond Public Schools)

Erin Kichinko-Willis, Thomas C. Boushall Middle School (Richmond Public Schools)

In this session, Kiara Thompson and Erin Kichinko-Willis will share how they incorporate project based learning into their middle school classrooms. Specifically, they will share the details of how they developed and implemented the Energy (PS.5c) and Element (PS.4a) projects, both of which are adaptable for virtual and in-person learning.

Grade Level: MS Main Content: Physics/Physical Science

Day and Time: Wednesday Session 8: 8:00pm-8:45pm Virtual Room F

Trawls to Antibiotics: Research Translated to K-12 Classrooms

Bethany Smith, Virginia Institute of Marine Science

Lisa Lawrence, Virginia Institute of Marine Science

Celia Cackowski, Virginia Institute of Marine Science

Sarah Nuss, Chesapeake Bay National Estuarine Research Reserve Virginia

What can we learn from a fish census? How can we determine antibiotic resistance? 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 online access to 40+ additional lessons at <https://tinyurl.com/VASEA-Lessons>?

Grade Level: MS-HS-COL Main Content: Biology/Life Science, Environmental Science, STEM

Day and Time: Wednesday Session 8: 8:00pm-8:45pm Virtual Room G

Ditch the Worksheets with Wizer.me

Pernell Denson, Norfolk Public Schools

With Wizer, teachers can create digital worksheets by using different types of questions, incorporating images and videos, and even recording directions. Teachers can ask students to label images, categorize information, respond to open-ended and multiple-choice questions, or respond to video content. Flip the classroom by following videos with open response questions to be discussed in class. Create cloze reading passages to assess reading comprehension and vocabulary skills.

Grade Level: ALL GRADES Main Content: General

Day and Time: Wednesday Session 8: 8:00pm-8:45pm Virtual Room H

How to BLOW Your Students' Minds as They Learn About Weather

Bonnie Keller, Colgan High School

Use the Null School website to help students discover pressure centers and how they relate to weather. Students will compare pressure systems in Northern/Southern Hemispheres, and also see the other characteristics that the Nullschool website can teach.

Grade Level: HS-COL Main Content: Earth/Space Science, Environmental Science, General

Day and Time: Thursday Session 9: 4:00pm-4:45pm Virtual Room A

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

Jennifer Maeng, University of Virginia

Kaitlyn Smith, James Madison University

Sunny Johnson, Old Dominion University

Myra Thayer, Virginia Department of Education

Calling all pre-service teachers! Join us to 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 you are just beginning a teacher preparation program or graduating in May!

Grade Level: ALL GRADES Main Content: General

Day and Time: Thursday Session 9: 4:00pm-4:45pm Virtual Room B

How to Teach Nature Journaling

Kathy Frame, Papillon Education Services LLC

Nature journaling is an extremely effective and engaging way to teach observation, curiosity, and creative thinking. Journals are the ubiquitous tools of scientists, naturalists, thinkers, poets, writers, and engineers. Using a journal is a skill that can change [your] students' lives forever.

Grade Level: ALL GRADES Main Content: Environmental Science

Day and Time: Thursday Session 9: 4:00pm-4:45pm Virtual Room C

Explore Smithsonian Science: Investigating Freshwater (2)

Cheryl Lindeman, Retired STEM teacher educator

Knans Griffing, Smithsonian/Carolina

Our live workshop will explore the Smithsonian Science for the Classroom™ module, How Can We Provide Freshwater to Those in Need? Teachers will experience how engineering design, phenomena, and investigative science raise the bar for students solving for real-world problems. Using resources from the Smithsonian, this module scaffolds NGSS 3D collaborative systems thinking. Post workshop materials will be shipped for those interested.

Grade Level: ELEM Main Content: Environmental Science, Engineering, STEM

Day and Time: Thursday Session 9: 4:00pm-4:45pm Virtual Room D

Islands No Longer: Environmental Science Community Solutions

Anajai Peterson, Henrico County Public Schools / Varina High School

Melinda VanDevelder, Virginia Commonwealth University, School of Education - Teaching and Learning

An environmental science teacher and a university-based STEM educator created a 9-weeks project that infused life skills and childhood play memories with the current issues of urban and suburban heat islands, food deserts, and lack of community green space. The project was designed to promote inquiry, research, critical thinking, community learning, creativity, and play. The goal for this project was to provide engaging learning opportunities with a focus on culturally relevant issues.

Grade Level: HS-COL Main Content: Environmental Science

Day and Time: Thursday Session 9: 4:00pm-4:45pm Virtual Room E

JMU STEM Outreach and Engagement Opportunities for K-12

Kerry Cresawn, James Madison University

Remy Pangle, James Madison University

Visitors will learn about the multitude of opportunities for K-12 students and teachers to participate in informal STEM education with JMU faculty and students, both on and off campus. We will share information materials and discuss the programs' target audience, accessibility, platform, timing, and the types of STEM skills and disciplines practiced. We will also share measures taken by the various programs to increase access for historically excluded groups in STEM.

Grade Level: ALL GRADES Main Content: STEM

Day and Time: Thursday Session 9: 4:00pm-4:45pm Virtual Room F

Strategies for Engaging EVERY Learner

Robbie Higdon, James Madison University

Frustrated with students tuning out? In this session, participants will have the opportunity to experience active, meaningful learning experiences that can engage all students. Use of these strategies can assist teachers in facilitating learning opportunities that can result in deeper understanding and higher levels of mastery for all students.

Grade Level: ALL GRADES Main Content: General

Day and Time: Thursday Session 9: 4:00pm-4:45pm Virtual Room H

Introduction to Bioinformatics

Mark Levy, Roanoke Valley Governor's School

The goal of this session is to give the opportunity for folks with limited or no background in bioinformatics to a comfort with the fundamental concepts in the field. We will start with an overview of key background information and terminology and will then touch on some important databases and techniques. The session will close with a guided demonstration of an activity that could be used in the classroom with students.

Grade Level: HS-COL Main Content: Biology/Life Science, Math in Science

Day and Time: Thursday Session 10: 5:00pm-5:45pm Virtual Room A

Get involved with JVSE! There is Room for Everyone!

Jennifer Maeng, University of Virginia

Amanda Gonczi, Michigan Technological University

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.

Grade Level: ALL GRADES Main Content: General

Day and Time: Thursday Session 10: 5:00pm-5:45pm Virtual Room B

Claim Evidence Reasoning: Strategies for Student Success

Pam O'Brien, STEMscopes by Accelerate Learning

Join us for an interactive workshop on Claim Evidence Reasoning (CER). We will discuss and explore strategies for implementing CER, scaffolding the process to reach more learners, and communicating clear expectations to students.

Grade Level: ELEM-MS Main Content: General

Day and Time: Thursday Session 10: 5:00pm-5:45pm Virtual Room C

Engaging in Science: Learning with Preservice Teachers

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.

Grade Level: MS-HS Main Content: Biology/Life Science, Chemistry, Physics/Physical Science

Day and Time: Thursday Session 10: 5:00pm-5:45pm Virtual Room D

Enliven Student Learning with Experimentation

Angie Harr, Vernier Software & Technology

Excite your students with hands-on science whether you're in the classroom or teaching remotely through collaborative data collection and real time analysis. Seeing data collected right before their eyes using the Vernier Graphical Analysis™ Pro app gives students the ability to connect abstract concepts to real-world applications. We will show you how to use our app to energize your classroom through data sharing, interactive sample experiments with synced data, custom videos, and more.

Grade Level: MS-HS-COL Main Content: General, STEM

Day and Time: Thursday Session 10: 5:00pm-5:45pm Virtual Room E

Engaging Students in Creating Clean Energy Solutions

Remy Pangle, JMU Center for the Advancement of Sustainable Energy

Explore ways to engage students finding solutions to problems such as climate change and energy justice. Participants will learn more about a summer camp offered by CASE that featured a solar solutionary suitcase built by high school students and deployed to Kenya to power a school in a refugee camp. The resources used for the

camp will be reviewed and we will discuss how to do this with students in their classroom and how to develop a make-shift version using other resources.

Grade Level: MS-HS-COL Main Content: Environmental Science, Engineering, STEM

Day and Time: Thursday Session 10: 5:00pm-5:45pm Virtual Room F

Diving Deeper into Bioinformatics

Mark Levy, Roanoke Valley Governor's School

The goal of this session is to help folks explore techniques and databases used in the field of bioinformatics. A participant most likely to benefit from this session would have a basic understanding of the field (consider attending concurrent session "Introduction to Bioinformatics"), but lacks experience or college coursework. We will explore a variety of databases and software tools and guided demonstrations of several software tools will be provided.

Grade Level: HS-COL Main Content: Biology/Life Science, Math in Science

Day and Time: Thursday Session 11: 7:00pm-7:45pm Virtual Room A

College and University Science Educators Share Session

Jennifer Maeng, University of Virginia

Sarah Nuss, Virginia Institute of Marine Science

Anne Petersen, 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 to use with pre-service teachers.

Grade Level: HS-COL Main Content: General

Day and Time: Thursday Session 11: 7:00pm-7:45pm Virtual Room B

Let's Talk Science: Strategies to Encourage Student Voice

Pam O'Brien, STEMscopes by Accelerate Learning

Join us as we explore a simple yet effective talk process that will encourage students to more fully own their thinking and effectively communicate their ideas to peers. This interactive session will include a variety of talk strategies that support the Virginia Science Standards of Learning as well as best-practice instruction for all learners!

Grade Level: ELEM-MS Main Content: General

Day and Time: Thursday Session 11: 7:00pm-7:45pm Virtual Room C

Not Another Buzz Word: Culturally Responsive Science

Anthony Little, Little Solutions

Buzz words. They can be found all throughout education. While some of them can be fluff, there are always best practices that indeed help students to succeed. The latter is true for culturally responsive teaching. Culturally responsive teaching is a research-based pedagogy that connects students' learning in the classroom to their culture and life experiences. Join us as we discuss using culturally responsive teaching in the secondary science classroom to help all students succeed.

Grade Level: MS-HS Main Content: Biology/Life Science, Chemistry, Physics/Physical Science

Day and Time: Thursday Session 11: 7:00pm-7:45pm Virtual Room E

High Altitude Balloon Research

Andrew Jackson, Harrisonburg High School

Erich Sneller, Harrisonburg High School

Seth Shantz, Harrisonburg High School

Hear from the staff and students who have conducted multiple successful flights of a high altitude research balloon to altitudes of approximately 98,000 feet. See video and data from the the last two missions and hear why students gave a week of their summer to do it!

Grade Level: HS-COL Main Content: Engineering, STEM, Student Designed Research