VAST Concurrent Sessions
Professional Development Institute
Williamsburg, Virginia
November 16 -17, 2018
Concurrent Session 1 Breakout Presentations • Friday • 8:30 - 9:20 a.m.

Room D — ELEM, Math in Science

Designing Science Units Which Include Math Integration

Susan Bardenhagen, VAST Region IV Director

Natural connections occur between Math and Science – patterns, organizing, problem-solving. Measurement supports science experiments, abstract concepts of both Earth & Space Science and place value beyond millions become understandings when partnered; fractional concepts support classification in life science. Whether self-contained or departmentalized, Math and Science units can be planned in tandem, crosscutting curricular areas. Presenter will share strategies with hands-on activities.

Room 10 — ELEM, Environmental Science, Engineering

Engaging MWEEs: Leaving No Child Inside

William McConnell, Virginia Wesleyan University; Maury Howard, Virginia Wesleyan University; Hilve Firek, Virginia Wesleyan University

Join us as we share several engaging environmental science activities aligned to VA SOLs in which no child (or teacher) is left inside! Participants in this session will rotate through several workshop-based stations to experience environmental science related activities including species identification, modeling, and engineering design. Materials provided. (Other presenters include Katie Catania, Molly Lewis, Dasia Fulp, Kennedy Scala, Catherine Ponack, Sierra Olson, Sarah Toner.)

Room 5 — ELEM-MS, General

Avoiding De-Natured Science: Fun Activities for Teaching NOS

Randy Bell, Oregon State University

Understanding the nature of science (NOS) is critical for responding to issues of the 21st century such as global climate change, renewable energy, and genetically modified foods. This research-based presentation summarizes major themes of NOS and engages participants in fun and thought-provoking activities designed to teach NOS to elementary and middle school students. These activities are aligned with Virginia's SOLs and are designed to be flexible so that you can use them right away!

Room 3 — ELEM-MS, Physics/Physical Science, General

The Magic of Science! (Learn Magical Demonstrations)

Robert Ellis, Fairfax County Public Schools

Have you ever seen a magic act, and wondered how something happened? Would you like to make boredom "disappear"? Learn entertaining and baffling magical effects to grab your student's attention. These demonstrations and hands-on activities have been perfected by a real magician, and comply with VAST/NSTA safety rules. This session is primarily directed toward K-8 SOL, however anyone interested will learn something new. Lecture notes will be available so you can start the magic right away!

Room 11 — ELEM-MS, General

What Makes for a Good (Scientific) Argument?

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

In this interactive session, participants will explore the components of a scientific argument, and will consider how this approach can accommodate other processes such as the scientific method. Participants will construct a scientific argument by conducting a brief investigation in order to generate a claim, evidence, and a justification. Participants will receive sample lessons through which they can teach scientific argumentation.

Room 8 — ELEM-MS, Earth/Space Science, Physics/Physical Science

Easy STEM Integration with NASA Resources

Joan Harper-Neely, National Institute of Aerospace (NIA); Betsy McAllister, National Institute of Aerospace (NIA)
Betsy McAllister, Hampton City Schools and National Institute of Aerospace

NASA has many resources to support STEM integration in the science classroom. During this session attendees will participate in hands-on activities involving physical and Earth science standards for grades 3-8. (Not-for-Profit exhibitor presentation)

Room 18 — MS, Biology/Life Science

Environmental Literacy Model and Cross Curricular Lessons

Maurice Cullen, Virginia Beach Middle School; Erica Dean, Virginia Beach Middle School

Looking for cross curricular ideas for English and Science? This course will demonstrate how to combine those subjects using the Environmental Literacy Model (ELM). The focus will be on creating lessons involving 7th grade students researching insects and plants from the school's pollinator garden. Students use a template to create a digital field guide page and present them in a gallery walk. Discussion will include community involvement opportunities.

Central Lounge — MS-HS, Earth/Space Science, Environmental Science

Virtual Reality Field Trips Using 360 Cameras

Paul Sarandria, Woodrow Wilson High School; Jenny Garcell, Woodrow Wilson High School

Take your students on a virtual field trip! Participants will learn how to engage their students with curriculum content by using 360 cameras to take pictures & videos then use those images to create lessons with a web-based program (similar to a Google Expedition). Students can then experience locations beyond the classroom which may be otherwise inaccessible due to time, budget, or weather constraints. With the right technology, students can even view the images in 3-D.

Room 17 — MS-HS, General

Integrating Technology into Project Based Learning

Luke Williams, Rocky Run Middle School; Joy Pryde-Haskins, Rocky Run Middle School

During this session, we will give real-world examples of how a PBL delivery can be facilitated through the use of technology, with a focus on 1:1 learning. Participants will be shown a range of digital tools which can enhance each step of the PBL process, from the entry event and creation of the Need to Know List, through student research, and creation of the final product.

Room J — HS, Biology/Life Science, Environmental Science

VDOE Science Outcomes Update

Anne Petersen, VDOE; Myra Thayer, VDOE

Science outcomes have been prepared for Environmental Science, Anatomy and Physiology, Astronomy, and Ecology with the intention that these outcomes become the Standards of Learning for these courses at the next Standards of Learning Revision. Learn more about the outcomes as well as strategies/activities for teaching the Environmental Science Course.

Room H — ALL GRADES, Environmental Science, General

"Game-Making" Levels via Revels? Revels via Quick Learning?

Jim Disbrow, The Millennium Project

Game-makers consistently reflect both a leveling within the group - and a concurrent reveling emotional state. Game-makers post-tests indicate a better and longer retention than from other teaching modalities. Game-making pulls together each pod of game-makers with this hilariously successful technique. Participants go into a reveling emotional-state as they engage and understand quickly. Using a fairly complex example (environmental flux in the Arctic Circle), a simple game will be developed.

Auditorium — ALL GRADES, General

Getting the Best out of VAST- A Session for First Timers!

Thomas Fitzpatrick, Roanoke City Public Schools

Navigating the PDI and using your time wisely 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 on sessions that fit their specific needs. The session presenter 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 out of their PDI attendance.

Room 2 — ALL GRADES, Earth/Space Science, Physics/Physical Science

The Search for Exoplanets: Classroom Activities

Harold Geller, George Mason University

Attendees will participate in classroom activities focused on the search for exoplanets, especially linked to the Transiting Exoplanet Survey Satellite (TESS) spacecraft launched by NASA on April 18, 2018. This will include demonstrations of both the transit method of detection and the radial velocity method of detection of planets orbiting stars other than our own sun.

Room 14 — ALL GRADES, General

SciGirls Seven: Strategies for Engaging Girls in STEM

Tina Harte, NASA Langley Research Center; Jessica Taylor, NASA Langley Research Center

SciGirls is an Emmy award-winning, NSF-funded, education program drawing on research about what effectively engages girls in science, technology, engineering and math (STEM) learning and careers. SciGirls videos and activities are designed with a singular but powerful goal: to inspire, enable, and maximize STEM learning and participation for all girls. Participants will learn how they can incorporate the SciGirls Seven Strategies to engage students in STEM. (Not for profit exhibitor presentation.)

Room C — ALL GRADES, Biology/Life Science, Environmental Science

Going Against the Flow-Promoting Literacy in Life Science

Delynda Hendricks, North Fork Middle School; Cara Stombock, North Fork Middle School

A teacher and former student turned colleagues, are using Trout in the Classroom to help promote literacy. Students investigate water quality required for Brook trout and learn to write scientific reports. English classes develop presentation media, including brochures and slide shows, with a goal of strengthening literacy skills in preparation for public presentations.

Concurrent Session 1 Breakout Presentations • Friday • 8:30 - 9:20 a.m.

Room AB — ALL GRADES, Environmental Science, Engineering

Challenge your Students! Renewable Energy Challenges for All

Remy Pangle, Center for the Advancement of Sustainable Energy at JMU

Come try your hand at designing a solar structure or a wind turbine! We will be exploring engineering design challenges for student on renewable energy and learning more about educational resources available to prepare teams to compete in Challenges throughout Virginia in 2019 and 2020. (Not-for-Profit exhibitor presentation)

ALL GRADES, Environmental Science, Engineering

Engaging Transportation STEM Activities for K-12

Angela Parsley, VA Dept. of Transportation

Cancelled

Explore hands-on STEM programs offered free to VA teachers. Experience a classroom activity from the RIDES program (hundreds of K-8 lessons) and the TRAC program (transportation-related modules for grades 6-12). All lessons encourage scientific exploration of topics including recycling, propulsion, tire performance, structures, engineering, the environment, and physics. No matter what grade you teach, you will see many hands-on activities that will fit into the topics covered in your classroom. (Not-for-Profit exhibitor presentation)

Room 12 — ALL GRADES, General

The Roots of Knowledge: Instruction for Science Literacy

Michael Petruzzi, Gar-Field High School; William Hammersten, Gar-field High School

This session will cover instructional techniques to integrate science literacy into the science classroom. Topics to be covered: Writing prompts for different classes and examples, root comprehension (Greek/Latin roots) and how to integrate them, ELL science literacy, and other techniques to enhance instruction through literacy.

Room 15 — ALL GRADES, Biology/Life Science, Environmental Science

Lessons from a Tree Trunk

Ellen Powell, VA Dept. of Forestry

Tree Trunks are full of activities that encourage student inquiry about many aspects of forests. Trunks are available for borrowing from State Forests, but the lesson plans are downloadable and can be used in any forested area. Sample lessons and a list of inexpensive supplies are provided to participants. (Not-for-Profit exhibitor presentation)

Room 16 — ALL GRADES, Biology/Life Science, Environmental Science

It's hAPPening! Learning the Flora of VA

Ann Regn, VA Department of Environmental Quality; Bland Crowder, Flora of Virginia; Suzie Gilley, DGIF/VRUEC

Bring the latest smart technology to field investigations! Learn how to use & integrate the new Flora of Virginia App with traditional data sheets, field guides & journals for botany & ecological surveys. Identification keys to all 3,200 plants of VA, their habitat & status described in the 7.5# text is in this app. A must for meaningful outdoor experiences, habitat restoration or schoolyard planting. Hands-on practice & drawing for free Apps. Tablet or smart phone suggested, but not required. (Not-for-Profit exhibitor presentation)

Session 2 Breakout Presentations • Friday • 9:35 - 10:25 a.m.

Room H — ELEM, General

Science and Literacy - A Natural Integration

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, non fiction reading text, post-reading applications and hands-on science experiments.

Room 8 — ELEM, General

Authentic Learning & Performance Based Assessment in K-5

Molly Lewis, Virginia Beach City Public Schools; Katie Catania, Virginia Beach City Public Schools

Participants will focus on the importance of authentic learning with real world application in elementary science. Participants will identify the United Nations Sustainable Development Goals and where they align to the science standards of learning to provide students with impactful learning experiences. The session will focus on threading performance based assessments throughout units of study while allowing opportunities for student agency.

Room D — ELEM-MS, Engineering, Math in Science

Encouraging Inclusion & Embracing Diversity with STEAM

Susan Bardenhagen, VAST Region IV Director

Infusing students' cultural background and history AND using PBL tasks strengthens learning. Scientists, technologists, engineers, and math educators identify that our future workforce needs problem-solving, critical thinking, and innovative strategies. Artists acknowledge that creative efforts are influenced by inquiry, patterns, and the design process. STEAM-infused education can be a community's vehicle to preparing its future. Purposeful integration of STEAM has a synergistic effect.

Room 10 ELEM-MS, General

Science and Engineering Practices is Not a Stand-Alone Unit

Kim Dye, FOSS Education Consultant; Kip Bisignano, Delta Education/FOSS

Science and Engineering Practices describe behaviors that scientists engage in as they investigate the natural world and that engineers use as they design and build models and systems. The practices are the skills, processes, and knowledge that students should regularly use to strengthen critical thinking and deep conceptual learning. Experience a FOSS investigation that authentically incorporates the practices while learning science content. (commercial exhibitor presentation)

Room 15 ELEM-MS, Biology/Life Science, Environmental Science

Field, Forest and Stream by Project Learning Tree

Page Hutchinson, VA Dept. of Forestry/ Project Learning Tree; Ellen Powell, VA Dept. of Forestry/Project Learning Tree

Field, Forest and Stream: In this inquiry-based activity you will conduct a field study of three different environments that focus on sunlight, soil moisture, temperature, wind, water flow, plants, and animals in each environment. Two versions of this activity will be presented and experienced: one for 1-3rd grades and one for 4-8th grades. This is one of 96 activities that can be found in PLT's PreK-8 Environmental Education Activity Guide. Participants will receive a copy of the activity. (Not-for-Profit exhibitor presentation)

Central Lounge ELEM-MS, Earth/Space Science, Biology/Life Science, Physical Science

Get Your Game On with Legends of Learning!

Heidi Rhodes, Prince William County Schools; Sean Reidy, Legends of Learning

Legends of Learning creates SOL-aligned digital games that increase subject mastery and engagement. Teachers use our platform to supplement and enhance their lessons. In our study with Vanderbilt University, students had higher levels of engagement, increased test scores and faster comprehension of the given content. See how you can integrate an exciting game-based learning platform into your SOL curriculum to give your students the superpower of knowledge! Bring your computer. (commercial exhibitor presentation)

Room 16 MS, Earth/Space Science, Physics/Physical Science

Harnessing the Power of the Sun

Emily Hawbaker, National Energy Education Development Project

Explore scientific concepts of solar energy through hands-on activities geared towards the intermediate level. Interdisciplinary activities reinforce the science behind solar energy. Design and test a solar oven, test UV beads, use PV cells to see how radiant energy can be transformed into electricity and how a motor transforms electricity into motion, and learn how light can be concentrated on an object. (Not-for-Profit exhibitor presentation)

Room J MS-HS, General

2018 Science Standards of Learning: Secondary

Anne Petersen, VDOE; Myra Thayer, VDOE

This session is designed to provide secondary teachers and leaders with information concerning the 2018 Science Standards of Learning. Although science content has not changed significantly, the wording of the standards has been changed to focus on science concepts. This change was made with the intent of allowing teachers to focus on concept development in science. The skills and processes have been reorganized to support Profile of a Graduate and to aid teachers as they embed these skills into content instruction.

Room 2 MS-HS, General

Uncovering Students' Thinking Through Formative Assessment (6-12)

Joyce Tugel, McGraw Hill Education

Grades 6-12 students come to the classroom with preconceptions about how the world works. So how do we uncover student ideas in science – and – what do we do once they're revealed? Join us as we learn how to use formative assessment to uncover student thinking about key concepts; practice formative assessment strategies that inform teaching and deepen ALL students' understanding of science content; and apply techniques that integrate assessment with the practices of science. (commercial exhibitor presentation)

Room 3 MS-HS, Physics/Physical Science

Physics Idea Share

Tony Wayne, Albemarle High School

Drop in any time during the presentation period and walk around between many stations in a casual atmosphere while multiple teachers share labs, activities, and ideas relating to physics education. Presented by V.I.P., (The Virginia Instructors of Physics.)

Room 5 MS-HS, General

Personalizing Science Through Annotated Photos

Carrie Weber, WorldStrides

In this workshop, participants will explore instructional models that merge students' passion for photography apps with their appreciation for complex science concepts. Teachers will enjoy seeing the visual expression of students' perceptions (and misconceptions!) of abstract and concrete theories, processes, and models. The provided instructional materials will guide science teachers through an interdisciplinary lesson to capture and reflect student thinking. (Not-for-Profit exhibitor presentation)

Room 11 MS-HS-COL, Biology/Life Science, Physics/Physical Science

Three Ways to Integrate History of Science in Science Teaching

Sydney Shelton, University of Virginia; Sarah Smith, University of Virginia; Frackson Mumba, University of Virginia

Integrating history of science (HS) in science lessons can increase students' interest in science, understanding science content knowledge, and evolution of science disciplines. But how can history of science be integrated in science lessons? We will demonstrate how to integrate history of science in science lessons through three approaches- Argumentation, Recurrent and Storyline. We will share activities, lessons, assessments, and templates.

Room AB HS-COL, Biology/Life Science

New AP Biology Resources from Cengage

Sara Heindorf, Cengage/ National Geographic Learning; Steve McClelland, Cengage/ National Geographic Learning

Our new AP Biology program features an integrated, inquiry-based learning system that guides students through every chapter, starting with key concepts at the beginning of each chapter and learning objectives for each section. In this session, we'll explore the dynamic MindTap platform that gives instructors complete control of their course and powers students from memorization to mastery. (commercial exhibitor presentation)

Room 17 HS-COL, Chemistry, Environmental Science

Interactive Notebooking for High Schoolers

Jen Sharp-Knott, Floyd County High School

Interactive Notebooking is NOT just for little kids! See examples of Chemistry, Ecology, and Biology interactive notebooks that have been successfully used in the high school setting, learn about classroom management and supply management options, learn about peer-reviewed research that supports this education practice, peruse notebooking resource books, and see options and schedules for grading interactive notebooks.

Room 14 HS-COL, General

STEM Majors in Sustainability, Environment, & Conservation

John Gray Williams, Virginia Tech - College of Natural Resources and Environment

Natural resources rarely come to mind when students hear the term STEM. But when you stop and think, virtually all consumer products, 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)

Auditorium ALL GRADES, Engineering, General

The Engineering Curse: Engineering is Everywhere I Look

Arthur Bowman, Norfolk State University

Through hands-on activities, see how everywhere that you look there is evidence of engineering in action. Everyone is constantly impacted by an incredibly large number of different types of engineering. Come see how all of us are really facing an "engineering curse" as we conduct an analysis of every aspect of our daily lives. Participants will leave knowing that all teachers and students have been acting as engineers all of their lives without having an awareness of this circumstance.

Room 4 ALL GRADES, General

Teaching Deaf Students . . .You Can Do It, We Can Help!

Brita Hampton, Virginia Beach City Public Schools; Kristi Greenstein, Virginia Beach City Public Schools;

Come and learn how to diversify and strengthen your teaching strategies to reach every child in your classroom. . . Especially those with hearing loss! We will demystify hearing loss and some of the equipment you have probably seen or even used (FM systems, hearing aids, cochlear implants.)

Room C ALL GRADES, Environmental Science, General

Fostering Creativity Through Environmental Education

Sarah Nuss, Chesapeake Bay National Estuarine Research Reserve

Environmental education provides students and teachers with diverse resources and experiences, inspires curiosity, and encourages students to pursue a specific interest, even at a young age. Utilizing the framework in The Creativity Challenge (Kim, 2016), outdoor experiences can encourage the building of students' creative and critical thinking skills. Learn the path to creative thinking and innovation using environmental education, including practical tips you can implement now. (Not-for-Profit exhibitor presentation)

Room 18 ALL GRADES, Biology/Life Science, Environmental Science

Thermal Systems in the Peruvian Amazon--How Can You Connect?

Becky Schnekser, Cape Henry Collegiate

As the Donna Sterling Awardee for 2017, Becky traveled to the Amazon rainforest with Andres Ruzo of National Geographic. Come learn about the expedition, field science experience, data collected, and how you can use it in your classroom. Also learn about the process of becoming the next Donna Sterling Award winner!

Session 2 Breakout Presentations • Friday • 9:35 - 10:25 a.m.

Room 12 ALL GRADES, General

Any Device, Every Virginia Student and Teacher - eMediaVA

Elmer Seward, WHRO Education – eMediaVA; Annie Gilstrap, WHRO Education – eMediaVA; Jane James, WHRO Education - eMediaVA

With over 129,000 learning objects like interactivities, simulations, videos, and lesson plans, eMediaVA offers every Virginia student and teacher free access to high-quality resources. Designed to work on cell phones, laptops, and desktop computers, eMediaVA is flexible enough to meet any student's needs. eMediaVA also makes it possible for students to download most items anywhere there is internet connectivity and access offline at a later time if needed. And the best part? It's free. (Not-for-Profit exhibitor presentation)

Preservice Teachers • Friday • Lunchtime • Noon - 1:00 p.m.

Room 18 ALL GRADES, General

Specifically for Preservice Teachers: What You Need to Know!

Alex Shafer, James Madison University; Jennifer Maeng, University of Virginia

Calling all pre-service teachers! Join us for lunch 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!

Session 3 Breakout Presentations • Friday • 1:10 - 2:00 p.m.

Room H ELEM, General

Exploring Earth's Resources with AITC

Lynn Black, Agriculture in the Classroom

Join the staff from Agriculture in the Classroom for this hands-on session that will use scientific investigation to explore renewable resources with your elementary students. Participants will have the opportunity to make their own bioplastic as they discover the ways in which the Earth's resources impact their daily lives. Teachers in attendance will also receive AITC curriculum and resources.

Room 12 ELEM, General

Teaching Science in an Inclusive Classroom

Mindy Gumpert, Old Dominion University

Over 66% of students with disabilities spend the majority of their day in the general education classroom. Many classroom teachers feel ill-equipped to teach these diverse learners. Several interventions are effective for teaching science to students with disabilities. This presentation will focus on four of them: peer collaboration, text structure analysis, explicit instruction, and graphic organizers. Participants will be provided with practical ideas to add to their science toolbox.

Room J ELEM, General

2018 Science Standards of Learning: Elementary

Anne Petersen, VDOE; Myra Thayer, VDOE

This session is designed to provide elementary teachers and leaders with information concerning the 2018 Science Standards of Learning. Although science content has not changed significantly, the wording of the standards has been changed to focus on science concepts. This change was made with the intent of allowing teachers to focus on concept development in science. The skills and processes have been reorganized to support Profile of a Graduate and to aid teachers as they embed these skills into content instruction.

Room 2 ELEM, General

Uncovering Students' Thinking Through Formative Assessment (K-5)

Joyce Tugel, McGraw Hill Education

Grades K-5 students come to the classroom with preconceptions about how the world works. So how do we uncover student ideas in science – and – what do we do once they're revealed? Join us as we learn how to use formative assessment to uncover student thinking about key concepts; practice formative assessment strategies that inform teaching and deepen ALL students' understanding of science content; and apply techniques that integrate assessment with the practices of science. (commercial exhibitor presentation)

Room 16 MS, General

Experiential Learning - Learning through Experience

Adrienne Britton, Norfolk Public Schools; Stephanie Henderson, Norfolk Public Schools

As a natural means of learning, experiential learning provides opportunities to reflect and think. Through experiential learning, students form knowledge, skills, and values because of direct experiences

Room D MS, Engineering, Math in Science

Building Literacy Skills through STEM Instruction

Cheryl Hinzman, Prince William County Schools; Meghan Waymire, Prince William County Schools
Kristin Rojas, Prince William County Schools

Are you ready to differentiate instruction and implement blended lessons with STEM? Join us as we share experiences from a STEM workshop offered to middle school teachers. Strategies focused on tasks that increased student discourse, conceptual understanding, reasoning, writing, and problem-solving skills. Resources include integrated lessons with hands-on-exploration through manipulatives to engage all learners and build their literacy skills.

Room 18 MS-HS, Biology/Life Science, Math in Science

Benthic Bugs and Bioassessment

Amanda Lambert, Lee County Public Schools; Jolene Lambert, Lee County Public Schools

Macroinvertebrate monitoring for water quality assessment is the basis of this activity. Because different species of macroinvertebrates react differently to environmental stressors like pollution, sediment loading and habitat changes, quantifying the diversity and density of different macroinvertebrates at a given site can create a picture of the environmental conditions of that body of water.

Participants will engage in a stream sampling simulation.

Room 15 MS-HS, Biology/Life Science, Environmental Science

SE Forests and Climate Change Module by PLT

Ellen Powell, VA Dept. of Forestry/Project Learning Tree; Page Hutchinson, VA Dept. of Forestry/Project Learning Tree

This module developed by Project Learning Tree and the University of Florida will help educators teach about climate change impacts on forest ecosystems, the role of forests in sequestering carbon, and strategies for reducing greenhouse gas emissions and adapting to changing climatic conditions. While this resource was created with southeastern forests in mind, the lessons can be used with students across the United States. The module can be obtained for free. (Not-for-Profit exhibitor presentation)

Room 17 HS, Chemistry

Fun Chemistry Laboratory Experiments, Activities & Projects

Paula Irwin, Stonewall Jackson High School

Are you a new or tenured chemistry teacher looking for some short, fun and hands-on laboratory experiments, activities and projects that reinforce the VA Chemistry SOL essential knowledge and skills? Then, this is a session you will not want to miss.

Room AB HS-COL, Environmental Science

Environmental Science from Nat Geo Learning

Sara Heindorf, Cengage/ National Geographic Learning; Steve McClelland, Cengage/ National Geographic Learning

We will showcase Environmental Science programs from Cengage/Nat Geo Learning, including on-level and AP courses. Our programs focus on core environmental issues while incorporating current research on solutions-based outcomes. National Geographic images, Explorers and scientists are featured to show how real science and engineering practices are used to solve real-world problems. We will demonstrate how our dynamic MindTap platform can be used to customize based on teacher and student needs. (commercial exhibitor presentation)

Room 3 ALL GRADES, Physics/Physical Science, General

Engaging in The Physical Sciences

Angelo Bonilla, Breckinridge Middle School; Brian Kreppeneck, Lucy Addison Middle School

Good teachers know that the trick is engaging your students. 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.

Central Lounge ALL GRADES, General

Integrating Chromebook with Vernier Technology

Jackie Bonneau, Vernier Software and Technology

Participate in fun and engaging experiments using Vernier digital tools with Chromebooks to compare grip strength, investigate pressure and volume relationships, and match position graphs. 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)

Room C ALL GRADES, Environmental Science, General

Downstream Collaborative

Katie Catania, VBCPS; William McConnell, Virginia Wesleyan University; Molly Lewis, VBCPS

Downstream Collaborative is a pilot program that was created this school year to evaluate opportunities to connect Virginia Beach 4th graders with field experts in order to examine the question, How do our choices and actions affect our shared watershed?

Room 10 ALL GRADES, General

Now It Makes Sense! Developing Understanding through Models

Kim Dye, FOSS Education Consultant; Kip Bisignano, Delta Education/FOSS

Conceptual models aid students in representing and communicating their understanding of science concepts. But how do we get students to develop models that represent their experiences, observations, and thinking? Through "sense-making"! Come explore a hands-on activity from the FOSS program and experience instructional strategies that help students make sense of scientific phenomena and acquiring science language. Hand-outs and resources will be provided. (commercial exhibitor presentation)

Session 3 Breakout Presentations • Friday • 1:10 - 2:00 p.m.

Room 8 — ALL GRADES, Earth/Space Science, Math in Science

My NASA Data 2.0: Iteration for Earth System Education

Elizabeth Joyner, NASA Langley Research Center

NASA offers petabytes of global Earth science data collected from satellites but accessing these data in a traditional science classroom can be tricky. After nearly 15 years of offering Earth science data to educators and students, NASA showcases the new face of My NASA Data (MND). This change features new and revised resources for exploring our Earth system from a phenomena-based perspective. (Not for profit exhibitor presentation.)

Room 14 — ALL GRADES, General

Formative Assessment and Developing Critical Thinking Skills

Jennifer Maguire, Virginia Tech

This session is intended to discuss the importance of formative assessment as a tool for guiding students and helping all students to make progress. A variety of formative assessment tools will be explored. Most importantly, the use of individual feedback on formative assessments will be demonstrated and we will discuss how this leads to improved metacognition and critical thinking skills for students.

ALL GRADES, Biology/Life Science, Environmental Science

In House Field Trips: Nature Delivered!

Sarah Pope, Ebbing Tides Outreach

Planning an outdoor field trip to the beach or forest can be arduous and downright impossible with some principals and school schedules. Wouldn't it be so much easier if Nature could come to you? Ebbing Tides Outreach does just that! We will bring all the components of an ecosystem right to your class. No planning or stressing required! We can even write your lesson plan for the day too. So sit back, relax, and let your students explore nature, without leaving the classroom! (commercial exhibitor presentation)

Cancelled

Room 11 — ALL GRADES, Biology/Life Science, Physics/Physical Science

Project-Based Science Instruction in K-12 Classrooms

Vidhya Sankaranarayanan, University of Virginia; Catherine Gamboa , University of Virginia
Frackson Mumba, University of Virginia

Project-based science instruction (PBSI) approach enhance student learning. Is PBSI the same as Problem-Based learning (PBL)? Participants will learn about the main characteristics of PBSI. We will demonstrate how to develop PBSI activities using templates we have developed. Participants will receive example PBSI units, activities, and assessments.

Room 5 — ALL GRADES, Earth/Space Science, General

Digitizing Interactive Notebooks-Taking Content OFF the Page

Caitlin Unterman, Virginia Episcopal School

Take your interactive notebooks OFF of the page and make them digital! Create higher level thinking digital interactive notebooks to demonstrate content mastery. Digital Interactive Notebooks (DISNs) allow for technology-enhanced questions aligned with the Virginia Science SOLs while students have creative freedom over their final product. Come create a notebook and see how you can benefit from DISN's in your classroom!

Session 4 Breakout Presentations • Friday • 2:15 - 3:05 p.m.

Room H — ELEM, General

Supporting STEM and Literacy Learning through Problem-based learning (PBL)

Amanda Gonczi, Michgan Technology University; Jennifer Maeng, University of Virginia

Problem-based learning (PBL) allows for natural integration of science with other content (e.g. STEM, literacy) and supports inquiry instruction. In this session, participants will first learn what PBL instruction is. Then, we showcase activities from several classroom-tested 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.

Room 8 — ELEM, General

Wonder Science Kaleidoscope

LoriAnn Pawlik, Prince William County Schools

Still "squeezing in" science? You need to be comfortable using a Wonder Science lens for a new perspective on teaching your content kaleidoscope or maybe you need a kaleidoscope to teach Science Wonder. Come practice stress-free ideas to re-energize your teaching!

Room 10 — ELEM, Math in Science, General

Vast Ocean-Endless possibilities for a 5th grade SOL Review

Michael Pratte, Stafford County Public Schools; Laura VanDyk, Grafton Village Elementary
Katherine Counsell, Grafton Village Elementary School

To effectively review science, one must do science. Join us to complete a variety of performance tasks while traveling across the ocean floor as we explore the major 4th and 5th grade standards. STEM extensions and embedded technology skills will be modeled. Sample Performance based assessments for 4th and 5th science will be shared.

Room 2 MS-HS, General

Phenomenon-based Scientific Investigations

Meredith Kier, College of William & Mary

Preservice teachers will select and present one interdisciplinary phenomenon that requires both life science and physical science concepts to explain. Presenters will demonstrate how to elicit students' questions and use these driving questions to create a unit that teaches all standards-based concepts. Presenters will facilitate an introductory lab-investigation based on the phenomenon, showing participants how curriculum can be reframed around real-world events and students' questions.

Room 18 MS-HS, Biology/Life Science, Engineering

Bring Engineering Design to the Biology Classroom

Angela Morris, Bassett High School

Help students to learn science concepts through engineering and design. Students love to be engaged in activities in the classroom, and teachers like for students to learn from participating in activities. Guide student-learning in the science classroom through prototyping and testing. Water is essential for life to exist and biology is all about life. Designing, building, and testing a water filter is a great challenge for students to learn about water.

Room 17 MS-HS, Biology/Life Science, Environmental Science

Planning Field Science Experiences: MWEE Lessons Learned

Sarah Nuss, Chesapeake Bay National Estuarine Research Reserve; Carol Hopper-Brill, Virginia Institute of Marine Science

Want to boost your confidence in taking students on meaningful watershed educational experiences? VIMS educators will share best practices for planning and conducting MWEEs, including multiple examples of scientific investigations you can do outdoors with your students! (Not-for-Profit exhibitor presentation)

Room J MS-HS, General

You can be a Winner: PAEMST Information Session

Anne Petersen, VDOE

The Presidential Award for Excellence in Mathematics and Science Teaching is a prestigious national award that recognizes exemplary teaching in the science and mathematics fields. This year, the grant focuses on 6-12 grade teachers. This session will focus on the application process for PAEMST.

Room 16 HS, Biology/Life Science, Environmental Science

Involving Students in Authentic Conservation Research

Freddy Herrera, Operation Wallacea; Scott Sveiven, Operation Wallacea

Discover the empowerment, independence, and learning that comes with cutting edge biodiversity field research. As science educators, we recognize the importance of credible field work. Laboratory experiments are great, but imagine your students working alongside research scientists, developing protocols, collecting information and contributing to the published body of original research. (commercial exhibitor presentation)

Room 14 HS, Chemistry

Teaching Stoichiometry with Inquiry Based Methods

Jennifer Maguire, Virginia Tech

This session is intended to present ideas for teaching stoichiometry to chemistry students in a more inquiry-based way. Content that is heavily tied to procedural math skills has historically been challenging for teachers to present through an inquiry-based lens. Join us for discussion and strategy sharing.

Room 5 HS, Earth/Space Science

Engaging ELL's in the Sheltered Secondary Classroom

Eryn Sutliff, Harrisonburg High School; Laura Nelson, Harrisonburg High School

This presentation will showcase some effective instructional strategies and activities for engaging ELL's. These best practices aim to improve literacy by: increasing vocabulary acquisition, interpreting graphs and diagrams, supporting academic talk, and classifying content.

Room AB HS-COL, Biology/Life Science

Designing Phenomenon-Based Lessons for AP/IB Biology

Kristen Dotti, Catalyst Learning Curricula

Using simple manipulatives to depict the translation of insulin, students question how the complex processes of the Central Dogma could possibly be carried out. The answer? Gene regulation and molecular signals. Learn how to teach using phenomenon-based activities that nail AP/IB content. Experience this NGSS aligned method firsthand in the role of the student, with a lesson to take back to your classroom. (commercial exhibitor presentation)

Central Lounge ALL GRADES, General

Integrating BYOD and Chromebooks with Vernier Technology

Jackie Bonneau, Vernier Software and Technology

Participate in fun and engaging experiments using Vernier digital tools with Chromebooks and BYOD that compare grip strength, investigate pressure and volume relationships, and match position graphs. 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)

Session 4 Breakout Presentations • Friday • 2:15 - 3:05 p.m.

Room C — ALL GRADES, Biology/Life Science, Environmental Science

Promoting Diversity with School/University Partnerships

Hilve Firek, Virginia Wesleyan University; Deirdre Gonsalves-Jackson, Virginia Wesleyan University
William McConnell, Virginia Wesleyan University; Victor Townsend, Virginia Wesleyan University

School/University Partnerships promote diversity in the sciences by offering hands-on science experiences for students in grades K-12. From elementary environmental-science camps to summer-long biology courses just for high-school students, Virginia Wesleyan University professors work with area teachers to provide meaningful opportunities that help young people from all backgrounds come to view themselves not just as "students of science," but as scientists! Learn how you can do it too!

Room 15 — ALL GRADES, Biology/Life Science

Accessible Herb School Gardens

Kathy Frame, Papillon Education Services LLC

Gardening is a lifelong pleasure with endless benefits. School gardens foster positive learning environments that can engage ALL students. They level the field for students with physical disabilities, learning and behavior challenges and other special needs. By paying attention to details, compliance with the American Disabilities Act can be implemented. Hands-on experience with garden details will make learning in the garden possible for all.

Room 11 — ALL GRADES, Biology/Life Science, Physics/Physical Science

Case-Based Learning Activities for Science Classrooms

Zihan Guo, University of Virginia; John Sackson, University of Virginia; Frackson Mumba, University of Virginia

We will demonstrate Case-Based Learning (CBL) activities we have developed and tested in schools. Participants will learn how to develop CBL activities using CBL templates we have developed. We will share resources including CBL templates, CBL activities, and assessments.

Room 4 — ALL GRADES, General

Edulastic: A Free Online Resource for Creating TEI-like Questions

Debra Hicks, Syms Middle School; Travis Riddick, Syms Middle School

An online assessment that allows the teacher to create TEI Questions that are similar to those found on the SOL test. This presentation will show examples the various questions, and how to create the questions. Attendee are encouraged bring a computer with them.

Room 12 — ALL GRADES, General

Social Media for Science Leaders

Tim Kubinak, Suffolk Public Schools

The wealth of opportunities available to science teachers, in terms of professional development, partner engagement, and pedagogy, is at times difficult for classroom teachers to navigate. This session will provide science leaders (coordinators, supervisors, specialists, and teacher leaders) strategies for finding, sharing, and coordinating resources for their professional learning communities.

Room 3 — ALL GRADES, Physics/Physical Science, Engineering

Simple Electrical Circuits Inquiry

Janet Lundin, Mary Ellen Henderson Middle School

An inquiry based electrical circuit lab that can be suitable for upper elementary, middle and high school level students. This session will demonstrate how to make some very low cost light bulbs and holders, organization of the lab materials, and a grading rubric for a student oral lab demonstration to show understanding of electrical circuits. This inquiry is based on Unit 15 Electrical Circuits of INQUIRY PHYSICS A Modified Learning Cycle Curriculum by Granger Meador.

Room D — ALL GRADES, General/Math in Science

Quantitative Research Skills for the Science Classroom

Scott B. Watson, Liberty University School of Education

This activity-based presentation will focus on science research skills as a basis for research in all STEM disciplines. It will include suggestions that teachers can use to conduct studies in classrooms and schools for the purpose of determining the effectiveness of instructional techniques and curricula. In addition, there will be application of these same skills for teaching students in K-12 settings.

Session 5 Breakout Presentations • Friday • 3:20 - 4:10 p.m.

Room 3 — ELEM, Physics/Physical Science

Simple Machines Digitally

Carolyn Craig, Seatack Elementary School

You will experience with an integrated hands on and digital learning lesson on Simple Machines. This lesson will give some ideas on how to take advantage of technology to personalize learning for students. I will show how to take the information you get from the technology piece to pull small groups of students for differentiation. There is also a hands on activity to be used as an extension to this lesson.

Room H — ELEM-MS, Engineering, General

PBL & Engineering Design: A Natural Connection

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

Problem-based learning (PBL) is a great way to integrate engineering design (ED) into science instruction and develop students' creative thinking skills. Participants will learn what PBL instruction is and key components of ED. Then we will model activities that integrate ED from SOL-aligned PBL units and a structured process for developing PBL science units. Participants will apply components of this process to consider how they can generate questions and scenarios into their own instruction.

Room 8 — MS, Earth/Space Science

Explore Clouds with NASA and PBS' SciGirls

Tina Harte, NASA Langley Research Center; Jessica Taylor, NASA Langley Research Center

Are you looking for role models to inspire your middle school girls to pursue STEM? NASA Langley's cloud observation program was featured in the PBS show SciGirls in the episode SkyGirls: Data Collection. Participants will engage in the hands-on SciGirls activities, explore how to easily make cloud observation for NASA using the GLOBE Observer app, and learn how to use video segments from SciGirls to introduce young girls to female role models in STEM. (Not for profit exhibitor presentation.)

Room C — MS, General

Newcomer iStem: Developing Language by Design

Heather Kimberlain, Thomas Harrison Middle School; Emily Imgram, Thomas Harrison Middle School
Stephanie Nelson, Thomas Harrison Middle School

Imagine, plan, and create! Give newcomers an integrated language experience that engages higher order thinking skills and challenges them to problem solve in collaborative groups while accelerating their language acquisition. These classroom-tested strategies will arm students with 21st century skills that will prepare them for the future.

MS-HS, Environmental Science

Playing Games to Teach Science Concepts

Michael Barber, Albemarle County Public Schools

Cancelled

Many of the educational games used in classrooms are reskinned review activities. In this workshop, we will try out several hands on/ minds on games that teach academic content in engaging ways. The Tragedy of the Commons is a simulation game with cooperation and competition aspects that teaches conservation concepts. Monster Storms is a competitive card game wherein players compete to build up the largest storms using weather variables. Additional games will be modeled as time allows.

Central Lounge — MS-HS, General

Visual Literacy in Science for All Learners

Janine D'Elia, Chesterfield County Public Schools

Visual literacy is the ability to extract information from graphics that accompany text. Think: pictures, diagrams, graphs and charts. This session will give teachers strategies to implement immediately that will help ALL learners. Take with you activities that focus on interpreting data! Specific test-taking strategies will be covered as well. Appropriate for middle and high school.

Room 18 — MS-HS, Biology/Life Science, Environmental Science

Engaging Students in Science Through Hands-On Learning

Zella Hoyt, Stonewall Jackson High School

A look into how teachers can take every day items in their classroom to create a hands-on, engaging environment for students within the science classroom. This will give teachers a look at labs and activities that can be used for student exploration to help all students within the class, and will take teachers through multiple activities from an inquiry-driven Biology Classroom.

Room 10 — MS-HS, Biology/Life Science, Environmental Science

Meaningful Science and Field Experiences in Ecology Elective

Michael Pratte, Stafford County Public Schools; Shane Yeskey, Stafford High School

Meaningful field experiences belong in every science course and elective. Join us to see how a blend of phenomenon, project, and problem based instruction can set the stage for an engaging student experience in the Biology II Ecology elective class. A focus of using a seasonal campus field study experience will model how dynamic units emphasizing hands on investigation will build bio and environmental literate students. Participants will practice with probeware and testTab kits.

Room 17 — MS-HS-COL, Earth/Space Science, Environmental Science

Earthquakes, Sediments and Glaciers, Oh My!

Carol Hopper-Brill, VA Institute of Marine Science, Marine Advisory Program; Sarah Nuss, Chesapeake Bay National Estuarine Research Reserve

Based on current research, this hands-on activity shows how marine sediments reveal geologic activity on land and in the sea. Students collect mock cores to determine sediment sources including rivers, glaciers, and earthquakes. Some sources, like earthquakes, are catastrophic and some, like glacial melting, are evidence of long-term changes. Both require study so that human populations can be prepared for future occurrences. Can scale for middle, high school, and beginning college use. (Not-for-Profit exhibitor presentation)

Room 2 MS-HS-COL, Earth/Space Science, Environmental Science

Accessible Geology: Getting in "The Field" Online

Russell Kohrs, Massanutten Regional Governor's School for Environmental Science and Technology

In situations where field trips are not possible due to geography or funding or where students just are not able to go on such adventures due to accessibility, virtual field trips using geovisualization are an excellent answer. Come and explore the work of pioneers in this field who have already created a wealth online GigaPan images of outcrops and sediment samples as well as a library of 3D models of rocks, sedimentary structures, and more. Bring your laptop.

Room 14 HS, Chemistry

Mystery Powders

Erich Sneller, Harrisonburg High School; Suzanne Smith, Harrisonburg High School; Kasey Fisher, Harrisonburg High School

Come join this session and participate in a hands-on, guided inquiry investigation of five "Mystery Powders". Take on the role of a chemistry student as you explore the changes and properties of matter along with collaboration and lab safety. Leave with valuable experience and plan to engage your students' scientific creativity and collaboration. Materials provided will allow a teacher to incorporate this lab in the classroom in either a more open ended or scaffolded manner.

Room D HS, Physics/Physical Science

Dizzy Physics: Messing 'round with Rotational Motion

Meghan Waymire, Prince William County Schools; Kirsten White, Prince William County Schools

Turn fidget spinners into a learning opportunity! This session will take a hands-on approach to introducing tricky rotational motion concepts. We will demonstrate several low-cost activities that you can easily replicate with your students as you dizzy their minds and dazzle them with whirling experiences that are sure to stick. This session is appropriate for first-year and AP high school physics courses.

Room 16 HS-COL, Biology/Life Science, General

Developing Inclusive K-12 STEM Outreach Programs

Kerry Cresawn, James Madison University; Shelby Snowden, Prince William County Schools

Traditional models of K-12 outreach are not accessible to or pique interest in a large population of learners. Many programs are designed based on the scientist's interest and not on the needs of the student. We will present a model that has reached nearly 4,000 children by addressing the common barriers to inclusivity and alignment with teachers' goals. Participants will learn what works and doesn't work in program development and apply this to programs that would best serves their local K-12 community.

Room AB HS-COL, Biology/Life Science

Using Mitosis to Teach Hypothesis Testing in AP/IB Biology

Kristen Dotti, Catalyst Learning Curricula

Turn the root tip mitosis lab into an opportunity to teach test of correlation and chi-squared so students are prepared to analyze more complex data. Teachers will calculate the mitotic index in focal fields progressing up the root tip and then learn to perform a test of correlation and chi-squared analysis on the data sets generated. NGSS practices on the process of science will be implemented through the design of original experiments and the analysis of data using hypothesis testing. (commercial exhibitor presentation)

Room J ALL GRADES, General

Celebrating Our D.N.A.

Tekita Blackwell, Roots for A-STEM, LLC

Celebrating Our D.N.A. (Demiurgic Notable Ancestry) is a STEM initiative to positively impact the academic performance and career choices of African American and Hispanic students. Hear first-hand testimonials from participants of Roots for A-STEM, LLC - an organization devoted to exposing African American and Hispanic children to pioneers in the Arts and STEM. (Not-for-Profit exhibitor presentation)

Room 11 ALL GRADES, Biology/Life Science, Physics/Physical Science

Problem-Based Learning Activities

Anna Desmarais , Goochland; Tanner Winesett, University of Virginia; Frackson Mumba, University of Virginia

We will discuss characteristics of PBL instructional approach. We will demonstrate PBL units and activities we have developed and tested in schools. Participants will learn how to create PBL units, activities, and assessments for their classrooms. Participants will receive PBL template, PBL units, activities and assessments.

Room 12 ALL GRADES, General

Literacy in the Lab - Best Practices Instruction for ELs

Jeff Peake, Harrisonburg City Public Schools; Alexis Rutt, University of Virginia

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 target reading, writing, and oral language, and will cover numerous scientific concepts.

Session 5 Breakout Presentations • Friday • 3:20 - 4:10 p.m.

Room 15 — ALL GRADES, Biology/Life Science, Physics/Physical Science

Engineering Design Integrated Science Activities

William Squires, University of Virginia; Alexa Dostart, University of Virginia; Frackson Mumba, University of Virginia

Integrating engineering design in science classrooms can be challenging. We have developed user friendly teacher guide manuals for developing engineering design integrated science units, lessons, activities, and assessments. We will present teacher guide manuals, and illustrative engineering design integrated science units and activities. We will share teacher guide manuals, engineering integrated science units, and assessments.

Room 5 — ALL GRADES, Environmental Science, General

Culturally Responsive Teaching in Phenomenon-Based Learning

Arthur Bowman, Norfolk State University

Culturally Responsive Teaching (CRT) and Phenomenon-Based Learning (PBL) get students from culturally diverse backgrounds into the mainstream STEM, while helping to broaden their societal perspective. STEM delivered without a "real-world" content causes students to ask what STEM has to do with them. This is true of students from culturally diverse backgrounds. PBL relating to students and to trending news phenomena can provide concrete examples of STEM having specific cultural implications.

Session 6 Breakout Presentations • Friday • 4:25 - 5:15 p.m.

Room 3 — ELEM, Physics/Physical Science, Engineering

Designing with Electrical Circuits

Barbara Adcock, Powhatan County Public Schools

Explore basic circuit design, differences between incandescent and LED lights, and design and create an electronic study guide. Leave with several design briefs that require very few supplies and can be done on a shoestring budget!

Room 14 — ELEM, General

Green Screens- Green is No Longer Just for Plants

Ricky Bain, Rockbridge County Schools; Stephanie Tuttle, Fairfield Elementary School

Green Screens are becoming all the rage in many classrooms, but how can they be used in Science. We have created a number of videos for our YouTube channel giving the students a chance to create from their knowledge of science topics. This process gives students a chance to not only master the given curriculum, but gives them an opportunity to communicate what they know. In this session we will walk the audience through how we create videos, while allowing the students to drive the lessons.

Room H — ELEM, General

Investigating Inquiry

Sarah Donnelly, Bettie F. Williams Elementary School; Angela Ryan, Bettie F. Williams Elementary School

Immerse yourself in scientific investigation as you experience hands on learning activities perfect for whole group and small group in the elementary classroom. You will leave with a series of ready to go lessons to support the science SOLs.

Room 11 — ELEM, Environmental Science, General

Full STEAM Ahead!

Ashley Ring, Roanoke City Public Schools; Kit Richards, Roanoke City Public Schools

Fishburn Park Elementary is a unique (focus for STEAM) school in Roanoke City. Our teachers understand the importance of educating young scholars in the areas of science, technology, engineering, the arts, and mathematics. In this session, we will allow approximately 10 minutes to address each subject. There will be opportunities for hands-on play with innovative technology. Relevant lessons, which are aligned with Virginia SOLS, will be shared with participants.

Room D — MS, Physics/Physical Science, General

Mousetrap Cars -- A STEM Approach to Forces & Motion

Carolyn Elliott, Goochland Middle School

Are you looking for a new way to teach Forces and Motion? Requiring students to design and build mousetrap cars is a hands-on way to cover the objectives for PS 10 in the VDOE science framework. Newton's laws, speed, acceleration, work, force, mechanical advantage, efficiency and power can all be taught quickly and easily in the context of a student's mousetrap car.

Room 10 — MS, Physics/Physical Science, Math in Science

How Physical Science Can Prepare ALL Students for HS Rigor

Michael Pratte, Stafford County Public Schools; Nick Kinger, Shirley Heim Middle School

Kerlin Doss, North Stafford High School

A dynamic student experience in physical science can set the stage for success in rigorous high school science courses. Join us as we explore the materials, methods, and investigations needed for all middle school students to acquire and develop the appropriate vocabulary, skills, and science mindset.

Room 12 MS-HS, Earth/Space Science

Solar System Tour Guide

Angie Mutter, Twin Valley High School

I have just finished action research on project-based learning. I wanted to study the affect on student achievement and attitudes toward science using inquiry-based learning. I chose to develop a large scale solar system for the hallway and classroom. Students were given objects in the solar system to design and create. Each object required an information guide for tourists. Students used math to develop the correct proportions of the planets and their distances from the sun.

Room 18 MS-HS, Biology/Life Science, General

Biology and Health: A Year of Cross Curricular Collaboration

Jessica White, Syms Middle School

Some students may find cellular organization too abstract, but all students can connect to human health. A Biology and Health and P.E. teacher will share how they collaborated throughout the school year for a cross curricular experience. Presenters will provide participants with a planning template, co teaching strategies, field trip, and guest speaker ideas to help with their planning. Participants will also engage in hands on activities that they can use during their year of collaboration.

Room 16 MS-HS-COL, Biology/Life Science

Integrating Deep Ancestry into Integumentary System

Joan Ehlers, Kecoughtan High School

The National Geographic's Deep Ancestry research and, currently, its April 2018 edition inspired this unit. I have been using this in my high school Human Anatomy class for years. It involves melanocytes in skin, skin tone, skin cancer, Vit D production and osteoporosis.

Room J HS-COL, General

VAST Colleges and Universities Share Session

Jennifer Maeng, University of Virginia; Robbie Higdon, James Madison University; Harold Geller, 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 engage in a lively roundtable discussion about your current methods practices.

Room AB ALL GRADES, General

Hands-on, Minds-on: 4-H STEM School Enrichment

Tara Brent, Virginia Cooperative Extension

Field trip and supply funds low? Bring the field trip to your classroom through Virginia 4-H. Come learn the ways that 4-H can enhance your science instruction with SOL correlated lessons and programs. Participants will engage in sample activities and hear impacts of 4-H in Virginia classrooms.

Central Lounge ALL GRADES, Math in Science, General

Escape Room Challenges

Jill Collins, STEM Academy; Jacob Taylor, STEM Academy

Teachers will be introduced to and experience the Escape Classroom Concept. An Escape Classroom challenge involves solving a series of sequential clues in order to "escape" the challenge. Topics will be geared towards middle school science but can easily be adapted to any grade level.

Room 8 ALL GRADES, Earth/Space Science, Environmental Science

NASA GLOBE Clouds: Observations and Investigations

Marilé Colón Robles, NASA Langley / SSAI

Cloud observations are important for scientists to understand Earth's Energy Budget. NASA & the GLOBE (Global Learning and Observations to Benefit the Environment) program collected cloud observations from students and citizen scientists during the 2018 GLOBE Clouds Spring Data challenge, available for teachers to do suggested classroom investigations. Discover the suggested investigations and learn how to use technology to make new observations that are then matched to satellite data by NASA. (Not for profit exhibitor presentation.)

Room 15 ALL GRADES, Biology/Life Science, Environmental Science

PBL: Project Based Learning at Maymont

Courtney Harlow, Maymont Foundation

Project Based Learning (PBL) focuses on student exploration of a driving question to create a project that will be presented to an audience. Over a period of time, students will be given tools and opportunities that will aid in gaining a deep understanding of their topic. Driving questions should be complex and focus on real-world problems. PBL's at Maymont typically consist of a teacher training day, outreach, and culminate with a site visit that brings all of the student research together.

Room 2 ALL GRADES, Earth/Space Science

Beyond Dinosaurs: Fossil Evidence of Virginia's Past

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

Fossils are a natural teaching hook that are specifically referenced in SOLs at all three Virginia public school levels as well as in college courses. In this session, attendees will learn how to use fossils to determine how Virginia has changed over time with a focus on fossils that you can find in or close to your part of the State. Technology-based lessons will be shared, and it is suggested that you consider bringing a computer or tablet. Also, samples and resources will be provided.

Room 17 ALL GRADES, Earth/Space Science, Biology/Life Science

Virtual Reality in the Science Classroom

Caitlin Lamb, Forest Middle School; Debby Foran, Forest Middle School

Imagine taking your students to the rain forests in Borneo or to outer space to take a tour inside the ISS (international space station).Using Google Expeditions you can take students on virtual field trips to just about anywhere in the world! Expeditions can be implemented into science lesson plans with relative ease. Come and see how you can use Virtual Reality in your classroom!

Room 5 ALL GRADES, Biology/Life Science, Environmental Science

Engaging Learners: A Shift - Inquiry to Practices of Science

Peter Mecca, George Mason High School

Research has shown that inquiry instruction is generally effective in science classrooms. However, few teachers, for whatever reasons, actually engage in inquiry instruction. A new framework for science education encourages teachers to shift from inquiry to the practices of science. The practices of science allows more specific focus on the nature of science and its connection to specific science content. This has implications for learning, instruction, curriculum, and assessment.

AD

Room 18 ELEM-MS, General

A Share Fair Extravaganza for K -8 Teachers

Janet Lundin, Mary Ellen Henderson Middle School; Jaclyn Claytor, Nuckols Farm Elementary School

Join elementary and middle school professionals for an outstanding opportunity! Gather resources to make and take for use in your classroom immediately. Engage in hands-on activities & experiments, and find strategies to excite and encourage your students. There will be door prizes!

Room 14 MS-HS, Biology/Life Science, Chemistry

Real Science: Science Teachers in Research Labs

Rosalyn Hargraves, Virginia Commonwealth University; Jessica White, Bejamin Syms Middle School
Jason Riley, Alexandria City School; Pamela Noble, George Wythe High School

Three Region I teachers, from the summers of 2017 & 2018, will share their experience conducting research at VCU. The areas of study included:

A High School Biology teacher looking at the effects of nicotine on male versus female mice.
A High School Chemistry teacher exploring ways to characterize synthetic drugs like bath salts.
A Middle School Life Science teacher working with mice to determine effects of drug addiction on the brain.

Room AB MS-HS, Earth/Space Science, Environmental Science

Measuring Sea Level: Using Data to Predict the Future

Sandra Thornton, Broadwater Academy

We hear about rising sea levels and see their effects on coastal communities, but how do scientists use data from the past to make predictions about the future? This session will utilize data from the American Meteorological Society's Maury Project to provide opportunities for teachers to try out lesson activities that are classroom ready. Focus of the session will be on factors that influence sea level in bays, harbors, and along beaches. Activities are designed for students in grades 6-12.

Room 5 MS-HS-COL, Biology/Life Science

Incorporate Interactive Notebooks in Your Science Classroom

Jennifer Falin, Louisa County High School, Alice Scheele, Patrick Henry High School

In this session we will be discussing how to integrate interactive notebooks into your science classroom. With a focus on life sciences, 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 with us!

HS, Biology/Life Science

Phylogenic Trees and Dichotomous Keys

Cancelled

Katherine Bowen, Nottoway High School

Having trouble with your biology students grasping the concept of a phylogenic tree? Presentation will include how to create a phylogenic tree, use it to create a dichotomous key and get your students ready to investigate evolution.

Room J HS, Biology/Life Science, Environmental Science

Project Based Learning and the Traditional Ecology Classroom

Denise Coleman, Jefferson Forest High School

Get students to go beyond memorization, to application of real world environmental issues. Students choose an endangered species, introduce it in its natural habitat, and examine how that habitat is being altered by human activities. They will culminate their learning by presenting a presentation entitled "Why Should We Care?" that highlights their journey through ecology and how it is interconnected with our lives.

Room 10 HS, Biology/Life Science

Global Collaborations to Integrate Content, Culture, & Technology

Michele Douglass, Central Virginia Governor's School for Science & Technology

Students in VA and Mexico City collaborated to research a global issue. During the 6-week project, students researched and shared about their own geographic location, historical and current city demographics, and cultural differences. The final project included each team researching a global issue of their choosing and sharing what they learned with their international counterparts.

Room 2 HS, Chemistry

Modeling Method for Chemistry

Leslie Kovach, The Steward School

Participants will practice the techniques used in modeling instruction which include: model development, which attempts to answer a question with explanations supported by evidence collected during experiments; and model deployment, in which students apply the new model to solve problems and deepen conceptual understanding. Participants will also practice using different types of graphic organizers used in the modeling chemistry approach.

Room D — HS, Engineering, General

Wakanda: STEM Forever!

Tysha Sanford, Virginia Space Grant Consortium; Joyce Kuberek, Virginia Space Grant Consortium

In the movie, Black Panther, five African tribes war over a meteorite containing vibranium. In this session, you will learn how to combine environmental science, chemistry, mathematics, and engineering design to bring STEM alive for your students. You will also learn how to incorporate some Google classroom components and other technology to bring this lesson to life. In order to keep this momentum going, Virginia Space Grant Consortium will also share the components of our pre-college programs. (Not-for-Profit exhibitor presentation)

Room 16 — HS, General

Effective Teacher Behaviors Promote Robust Student Learning

Erich Sneller, Harrisonburg City Public Schools; Seth Shantz, Harrisonburg City Public Schools

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 passion for teaching. Please join us to share your ideas and to encourage our collective growth as teachers.

Room H — HS, General

Science and Literacy Connections for High School

Angela Webb, James Madison University

From making predictions and drawing on previous experiences to using evidence to draw conclusions, make inferences, and evaluate claims, the connections between science and literacy abound. In this session, preservice secondary science teachers from James Madison University will share ideas for connecting science practices and concepts to literacy practices related to reading, writing, and research.

Room 11 — HS-COL, Biology/Life Science, Environmental Science

Add Math to APES/IBESS/Biology with Data Generating Games

Kristen Dotti, Catalyst Learning Curricula

Discover data-generating activities that teach scientific phenomenon and NGSS practices through modeling. Use the data set to write a mathematic equation and hypothesis supported with evidence. (commercial exhibitor presentation)

Room 3 — HS-COL, Physics/Physical Science

Teaching Physics Instead of Teaching About Physics

Andrew Jackson, Harrisonburg City Public Schools

Basic, traditional lessons can be tweaked to go from low level learning to multi-dimensional learning. Transform your teaching from teaching about physics to having your students apply a more deep understanding of physics.

Auditorium — HS-COL, Earth/Space Science, Math in Science

Surveying and Geodesy in Colonial America: 18th Century STEM

Eric Pyle, James Madison University

Colonial America, especially Virginia, represented a chance for immigrants from Europe to actually own property. Land had to be measured, and when many maps were inaccurate, the work of surveyors, astronomers, and mathematicians defined the "shape" of the Earth leading to a precision of measurement unseen before. This demonstrative session will share how this work was done and how the instruments of scientific measurement relied on the elegance of classical mathematics. (Not-for-Profit exhibitor presentation)

Central Lounge — ALL GRADES, Environmental Science, General

Digital Badges Motif for STEM Classrooms

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

See how a digital badge motif can be used to enhance STEM instruction in any grades, without the need for fully technological implementation. Currently, full implementation of a digital badge program is technologically beyond the means of most K-12 classrooms. However, digital badge design coupled with a ordinary computer-based delivery can be used to enhance STEM instruction across all grades. Participants will leave this session with great insight into the digital badge process.

Amphitheatre — ALL GRADES, General

Using Online Simulations for Conceptual Understanding

Bonnie Ellis, Explore Learning

Learn how online simulations, Gizmos, can help teachers take advantage of research-proven instructional strategies and help students of all ability levels develop conceptual understanding in math and science. Teachers can supplement and enhance instruction with powerful interactive visualizations of concepts. Students can manipulate key variables, generate and test hypotheses, and engage in extensive "what-if" ex experimentation. (commercial exhibitor presentation)

Session 7 Breakout Presentations • Saturday • 8:30 - 9:20 a.m.

Room 8 — ALL GRADES, Biology/Life Science, Environmental Science

Citizen Science for Every Curriculum

April Harper, Maymont Foundation

Make teaching & learning Virginia's science SOLs meaningful by incorporating citizen science into your curriculum. Maymont educators will demonstrate how to utilize a wide range of easy to use databases to enhance lessons and research practices, both in the classroom & on field trips. Connections will be made to Project Wild lesson plans to highlight ease of use in the classroom. Educators will also share experiences & benefits of participating in Bioblitz as a part of Project-Based Learning.

Room 12 — ALL GRADES, General

Content Coaching for Science Supervisors and Administrators

Jennifer Maguire, Virginia Tech

This session is intended to introduce administrators, science supervisors, instructional coaches, or science department chairpersons to the basics of content-based coaching. Content coaching is a method of working with your teachers to co-plan and co-teach lessons. Content coaching is an innovative and transformative way to stay involved in the classroom and work with your teachers toward their goals.

Room 15 — ALL GRADES, General

Asynchronous Classrooms: How to Build Resources and Control

Michelle Plunkett, Loudoun County Public Schools

This presentation will walk you through the asynchronous environment for traditional classrooms. Come see how you build a classroom of student control, voice and choice, and student ownership. I will show you sample workbooks, digital resources, games, and classroom management tools that will turn your traditional classroom into a highly differentiated space.

Room C — ALL GRADES, General

NASA Online Professional Development Resources

Anne Weiss, NASA Langley Research Center

NASA Langley Research Center oversees the management of a digital badging system that includes a professional learning community (PLC), a popular method for delivering PD. PLCs support long-term collaborations for exchanging STEM resources. Meanwhile, digital badging are online certifications of an educator's learning experiences and skills. All told, NASA seeks to connect teachers with high-quality resources that leverage the agency's unique assets and inspire the next generation of explorers.

Room 17 — ALL GRADES, General

Foundation and Enrichment Science for Everyone

Kristen Young, Denbigh High School; Katie Hamilton, Denbigh High School

Come see how we close the gap of science vocabulary development and foundational skills. We will show you how we introduce new concepts, support varied levels of understanding and vocabulary knowledge. Learn how these hands on activities can be used to review course content and the application to class understanding of multiple concepts.

Session 8 Breakout Presentations • Saturday • 9:35 a.m. - 10:25 a.m.

Amphitheater — ELEM, General

Flex it! Science First…Reading and Writing will Follow

Kip Bisignano, Delta Education/FOSS; Kim Dye, FOSS Education Consultant

Hands-on science experiences provide three key factors not provided by traditional reading programs. Hands-on experience is motivating, is the fastest way to build background knowledge, and provides context for language for students who struggle with reading and writing. When we flip the instructional sequence, reading becomes authentic. Explore the new ScienceFlex program, from Delta Education, to experience this instructional sequence and program resources (grades 3-5). (commercial exhibitor presentation)

Room AB — ELEM, General

Provocations: Starting the Morning with Science

Maria Caragiulo, Newport News

This session focuses on how to take advantage of every moment in your classroom, beginning even before the bell rings. Morning activities can be extended to include hands-on authentic learning with real life scientific artifacts. Provocations are an opportunity for every student to engage and develop background knowledge before science based curriculum lessons begin, while also allowing time for formative assessments through teacher observation.

Room 12 — ELEM, Biology/Life Science, General

Panorama by Nat Geo: Reading Through the Lens of Science

Sara Heindorf, National Geographic Learning/ Cengage; Sarah Calkins, National Geographic Learning/ Cengage

We will explore National Geographic Learning's ground breaking new program, Panorama: Science, for Grades K-6. Panorama: Science incorporates life, Earth, and physical science strands through authentic fiction and National Geographic nonfiction. Powered by the MindTap digital platform, students will engage with interactive texts and stunning video. Teachers will have access to differentiated instruction and customized lessons based on reading and science standards. (commercial exhibitor presentation)

Room 3 ELEM, Physics/Physical Science, General

Elementary Physical Science by VA Instructors of Physics

Andrew Jackson, Harrisonburg City Public Schools

Let the Virginia Instructors of Physics help you with lessons on energy and the concept of independent variable, dependent variable, and constants in experiment design. We'll address misconceptions and provide lessons to take back to your 4th, 5th, and 6th grade classroom.

Room H ELEM, General

Inquiry First

Melonie Yielding, Ellis Elementary School

In schools with high ESL populations, teachers are often told it is best to front-load vocabulary before hand-on lessons. However, that strategy often prevents science students from grasping the vocabulary because they have no real life experiences to anchor their learning. This session will focus on how to structure a unit using the Five E's of Science so that the inquiry comes before the note-taking and vocabulary instruction.

Room 8 MS, Physics/Physical Science

Use Forensics to Enrich Your Physical Science 8 Classroom

Debra Peterman, Louise Benton Middle School

This ten-day introduction to forensics exposes eighth grade students to a few of the techniques used by crime scene investigators to collect, preserve, and analyze scientific evidence. The unit will enhance the eighth grade SOL objectives in chemistry and physics, placing emphasis on real world scenarios.

Room 10 MS, Biology/Life Science, General

Hands On: Real World Lessons for Middle School Classrooms

James Swart, GMA Science and Education Foundation

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

Room D MS-HS, Earth/Space Science, General

Engaging Inquiry: Pre-service Teachers Share Tested Lessons

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.

Room C MS-HS, Biology/Life Science, Environmental Science

Citizen Science: Developing the 5Cs Using Authentic Research

Deborah Neely-Fisher, Virginia Academy of Science; Julia Cothron, STEM Author and Consultant
Sujan Henkanaththegedara, Longwood University

Learn how Citizen Science is a vehicle for involving your students in meaningful authentic research. Become familiar with a variety of Citizen Science programs which are applicable to concepts taught in middle and senior high science. See how outstanding projects can be formatted for submission to VJAS or science fairs. Become aware of higher education STEM educators and researchers (in various parts of Virginia) who are willing to serve as mentors. (Not-for-Profit exhibitor presentation)

Auditorium MS-HS-COL, Earth/Space Science

What are these Rocks, Anyway?

Eric Pyle, James Madison University

Virginia is endowed with a rich range of geologic resources, the most important of which are stone and mineral sands used to produce the most mundane of foundation material to the most advanced materials, such as zirconium and titanium. Samples provided by the Virginia Transportation Construction Alliance will be discussed in relation to what they are in terms of rocks and minerals, Virginia geologic history, and Virginia geologic provinces. (Not-for-Profit exhibitor presentation)

Room 2 HS, Chemistry

Laboratory Safety Equipment and Techniques

Stephanie Harry, VAST Chemistry Content Chair

Laboratory safety and laboratory techniques are the first skills students learn in chemistry. This presentation will share activities and a laboratory experiment that can be used to teach these important skills during the first week of school. This lesson can be adjusted to meet the parameters of your school, students and classroom. These lessons cover SOL CH 1a and 1b.

Room 11 HS-COL, Biology/Life Science, Environmental Science

Mutant Mice: Helping AP/IB Students Describe Data Correctly

Kristen Dotti, Catalyst Learning Curricula

Collect data on groups of "mutant mice" and use these sample sets to guide students to make good choices in the use of data descriptors. The control group and the experimental group will have equal means, but the variation in the data set will be extreme and impossible to ignore. This activity leads students to determine logic must be used instead of habit when choosing the best mathematical descriptors. This activity will include take home lesson plans. (commercial exhibitor presentation)

Room 5 ALL GRADES, Earth/Space Science, General

How Can Outdoor STEM Education Help Your School?

Charlie Bueche, Astrocamp

Providing information on how outdoor STEM education experience can have immense benefits for students and teachers involved. The benefits for teachers who participate in this program can provide opportunities to expand skills and increase enthusiasm in science subjects. The experiential science curriculum supplements and connects teachers' content, which increases interest and knowledge in science for students. (not for profit exhibitor presentation)

Room 14 ALL GRADES, Biology/Life Science, General

Not Just Another Field Trip: Museums as Community Partners

Nicole Burns, Virginia Living Museum

Rethink how you plan your field trips and get more from your out-of-school time. Whether you are booking a bus or having a museum come to you, there are many ways informal science programming can be used to make your curriculum come to life. Museums offer a unique learning environment for all types of learners and should be considered a community partner when developing your curriculum. (Not-for-Profit exhibitor presentation)

Room 4 ALL GRADES, General

How to Disinfect Your Classroom of Indifference and Disinterest

Christy Glore, University of Kansas

This fun and participatory presentation provides instructional strategies to accommodate the full ranges of abilities and intelligences in your classroom. You will leave this presentation with immediately applicable techniques and learning activities that will connect with, engage, and motivate each of your students to learn science concepts and skills.

Central Lounge ALL GRADES, General

Creating an Inquiry-Based Classroom for Student Success

Stan Hill, Wake Forest School of Medicine; Kelsey Doolittle, Wake Forest School of Medicine

Discover an Inquiry-Based approach to learning that engages students and motivates them to achieve. Participants are introduced to instructional standards that can be used to transform any classroom. These standards are used with Problem and Project-Based Learning cases and hands-on instructional materials to help students develop critical thinking skills. During this workshop, participants will experience a student inquiry and look at how the parts combine to enhance teaching and learning. (not-for-profit exhibitor presentation)

Room 15 ALL GRADES, General

Coding in a Flash!

Jeff Lukens, Texas Instruments; Daniel Wilkie, Greenville, SC Public Schools

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)

Room J ALL GRADES, General

VDOE Update

Anne Petersen, VDOE

This session is designed to provide teachers and teacher leaders information as to legislation and initiatives, both state and federal, that may impact science instruction.

Room 16 ALL GRADES, General

NSTA Press K-12 by Debra Sawyer

Debra Sawyer, NSTA

NSTA offers two core programs integrating science and literacy. Picture Perfect Science and STEM K-5 brings science lessons with Read-Alouds as well as hands on activities with manipulatives together. Argument Driven Inquiry 6-12 has hands on labs with literacy infused. Please come join me for an overview of NSTA Press resources! (Not-for-Profit exhibitor presentation)

Room 17 ALL GRADES, Earth/Space Science, Environmental Science

Dive in: Linking Ocean Exploration to Your Class

Cassandra Weathersbee, Patriot High School;

95% of our world is unexplored and looking to inspire the next generation of scientists, engineers, and creative thinkers. Learn how the Ocean Exploration Trust's EV Nautilus explores the world below the waves and how you can connect your students with onboard scientists in real time. Discover the Nautilus's rich digital and hands-on resources; adaptable to different grade levels and curricula. Learn about the exciting professional development opportunities for educators on board the Nautilus!

Room AB ELEM, General

STEM Friday: Wrapping Up and Setting Off

Maria Caragiulo, Newport News

STEM Friday is the best day of the month. Learn how to orchestrate a real life culminating activity that incorporates science, math and literacy. STEM Friday is a great way for students to practice collaboration, teamwork, and communication skills. These activities also lend themselves to outside collaboration with older students, or family engagement, and is a great asset to any school.

Room 10 ELEM, General

Get 'em Hooked: Discrepant Events for Elementary Science

Kristie Gutierrez, Old Dominion University

Discrepant events are events that do not seem to follow the "rules of nature" and often puzzle or astonish the audience. These events are great "hooks" in the Engage portion of the 5E instructional model and can help assess prior student knowledge. In addition to demonstrating their discrepant events, the ODU teacher candidates will provide attendees with access to their discrepant event activities and describe how it fits into a lesson to cover VA Science SOLs. (presenters are PK-6 Science Methods students.)

Room 12 ELEM, Earth/Space Science, General

National Geographic Science: Engaging Program for Grades K-5

Sara Heindorf, National Geographic Learning/ Cengage; Sara Calkins, National Geographic Learning/ Cengage

In this session, we will explore the National Geographic Science program for students Grades K-5. This program immerses students in the Nature of Science and Inquiry while building scientific and content literacy. The digital platform features interactive games, videos and text to engage the students. We will walk through a lesson to show teachers the Nat Geo experience. (commercial exhibitor presentation)

Room 14 ELEM, General

MEthodical Planning: Science Lessons with ME in Mind

Angerina Jones, Portlock Primary School

"MEthodical Planning: Science Lessons with ME in Mind" aims to encourage and empower educators to deliberately plan primary level science lessons that engage the specific learning styles of African American students. Participants will explore culturally germane learning styles and several relevant instructional strategies for science based lesson planning.

ELEM-MS, Earth/Space Science, General

Technology in the Science Classroom

Eric Hallal, Colonial Heights City Schools

Cancelled

In this session, attendees will learn various technology media that they can use in their classrooms immediately. Media that will be discussed and gone over include plickers, Phet, QR Codes, and many other interactive sights. Participants will leave with examples for their classrooms on how to use these mediums and be shown ways to use each of them in their classrooms to increase student engagement and success. Bring your laptop to this presentation.

Room D ELEM-MS, Earth/Space Science, Physics/Physical Science

Exploring Forms of Energy and Energy Transformations!

Emily Hawbaker, National Energy Education Development Project

Explore six, hands-on stations - motion, sound, thermal, radiant, electrical and chemical energy is fun to teach! The investigations use items encountered in our daily lives – glow sticks, hand warmers, batteries, etc. – but often have little understanding of the science behind how they work. Participants will leave feeling confident to teach energy forms & transformations in their elementary classroom. (Not-for-Profit exhibitor presentation)

Room C MS-HS, General

Enhance Student Learning on a Rural Shoestring Budget

Amanda Dorton, Council High School

You are a teacher in a rural school. Your laboratory supplies are meager. How can you implement laboratory activities on a budget and still give your students the same opportunities as other students in Virginia? This presentation (geared primarily at new teachers) will give you lesson ideas, lab activities, and lab safety tips to assist you in engaging your students.

Room 15 MS-HS, Math in Science, General

Merging the "Bookends" of STEM Through Data Collection

Jeff Lukens, Texas Instruments; Daniel Wilkie, Greenville, SC Public Schools

The integration of science and mathematics (the "bookends" of STEM) 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)

Room J — MS-HS, General

2018 Science Standards of Learning: Secondary

Anne Petersen, VDOE; Myra Thayer, VDOE

This session is designed to provide secondary teachers and leaders with information concerning the 2018 Science Standards of Learning. Although science content has not changed significantly, the wording of the standards has been changed to focus on science concepts. This change was made with the intent of allowing teachers to focus on concept development in science. The skills and processes have been reorganized to support Profile of a Graduate and to aid teachers as they embed these skills into content instruction.

Room 3 — MS-HS-COL, Physics/Physical Science

VIP Share Session!

Andrew Jackson, Harrisonburg City Public Schools

Tony Wayne, Albemarle County Public Schools

Physics teachers will do 5-10 minute shares of classroom tested labs, demos, and lessons and provide handouts for you with all the details to take back to your classroom. VA Instructors of Physics (VIP)is a 30 year old collaboration of physics teachers from across the state.

Room 16 — HS, Biology/Life Science

Energy Quest: Visualizing Cell Pathways Using Augmented Reality

Spencer Ellington, CPO Science

Get ENERGIZED about teaching energy pathways with the CPO Science Link Energy Quest module-featuring cutting-edge Augmented Reality. Through collaborative game board play and manipulating 3D imagery with a swipe of a finger, students will be clamoring to earn 32 ATP and synthesize glucose molecules. Enter a raffle to win a Crazy Traits equipment piece. (Commercial exhibitor presentation)

Room 2 — HS, Chemistry

My Smorgasbord of Chemistry Ideas

Stephanie Harry, VAST Chemistry Content Chair

It's a smorgasbord Chemistry experience. This presentation will share some of my favorite Chemistry experiments, activities, and organization skills that I have used and adopted in my twenty-plus years as a teacher.

Room 11 — HS-COL, Biology/Life Science, Environmental Science

Discovering New Species with Students via Research

Scott Sveiven, Operation Wallacea

Operation Wallacea is an organization that has been running a series of biological and conservation management research programs around the world since 1995. These expeditions are designed with specific wildlife conservation aims in mind. The uniqueness of Operation Wallacea is that large teams of ecologists- ranging from ornithologists to ichthyologists- are concentrated at these target sites thus allowing our volunteers the opportunity to work with experts out in the field. (commercial exhibitor presentation)

Room 17 — ALL GRADES, Biology/Life Science

Suitcase Science: Hands-on Lessons Shipped to Your School

Rachel Clark, Virginia Aquarium & Marine Science Center

The Aquarium offers six Suitcase Science Kits for grades K – 12 that can be shipped to your school. Each kit includes lesson plans and activity materials to highlight the topic plus games, posters, DVDs, biofacts, and books. Participants will take a closer look at two of our kits – Sea Turtle Science and Climate Science by trying out activities and resources. Participants will receive a copy of all the lessons from the kits plus enter for a chance to win a free suitcase rental. (Not-for-Profit exhibitor presentation)

Room 4 — ALL GRADES, General

Storytelling: So Simple Even Your Kids Can Do It!

Christy Glore, University of Kansas

Storytelling is meant to capture the senses, mind, and heart. Used effectively, storytelling can be used to draw in your students and connect them with the content. Therefore, storytelling is not just for literature classes. In this participatory presentation, learn how to accommodate the full ranges of abilities and intelligences in your classroom by telling a story using visual, audio, kinesthetic, and emotional anchors.

Room 8 — ALL GRADES, Engineering, General

A STEAM Collaboration: Engaging School Family and Community

Marilyn Lanier, Fayetteville State University; Cynthia Wooten, Fayetteville State University

A Glogster presentation will be used to portray the developmental strategies involved in organizing the event. Following the Glogster presentation, attendees will take part in a minimum of three engaging STEAM hands-on activities frequently presented at our model event. Attendees will discuss features of the event and be guided through an easily adaptable template for integration into their own school or university's engagement plan.

Session 9 Breakout Presentations • Saturday • 1:00 - 1:50 p.m.

Room 18 — ALL GRADES, General

VISTA: A Legacy for Virginia Science Education

Anne Mannarino, Regent University; Jackie McDonnough, VCU retired; Juanita Jo Matkins, William & Mary retired
Elizabeth Edmondson, Virginia Commonwealth University

The Virginia Initiative for Teaching and Science Achievement (VISTA) invites you to join us and other VISTA participants for an update on the VISTA program. Were you part of this movement? Then come see the impact VISTA had on science education in Virginia. Share your VISTA stories, successes, resources, and experiences to highlight the true impact of VISTA in Virginia. Open to all former VISTA participants

ALL GRADES, Biology/Life Science

Pairing Content and Skills for Instruction and Assessment

Mitch Price, Educational Testing Services

Cancelled

Writing assessment questions that explicitly combine a scientific skill with content is a powerful way to examine what students can do to better infer what they know and understand. This session will focus on techniques for using questions as instructional tools, as well as writing questions to measure learning outcomes. Development of items for multidimensional standards will be discussed and emphasis will be placed on active participation.

Amphitheatre — ALL GRADES, Earth/Space Science, Environmental Science

Flowdown: Watershed Modeling from Simple to High-Tech!

Matthew Scott, Freeman High School

Have you struggled with teaching the concept of a watershed in your Earth Science/Environmental classroom? Join us to learn hands-on strategies to teach basic watershed mapping skills and concepts to students. Demonstrations will range from simple, free options that you can make in your own classroom, to high-technology simulations and computer-aided 3D models. Take home 4 ways to help students understand the relationships between topography, watersheds, and pollution!

Central Lounge — ALL GRADES, General

Liquids are Tricky: Addressing Misconceptions in Science

Alex Shafer, James Madison University, Robbie Higdon, James Madison University

Do trees get food from soil? Are seasons caused by Earth's orbit? Can you see in a totally dark room? All of these, and many more, are common misconceptions that students may have when entering a classroom. Join the JMU student chapter of the NSTA to discuss how we can best address these misconceptions by examining one of our lessons, "Liquids are Tricky" as a case study. There will be many hands-on and brainstorming activities, as well as take-home copies of the liquids lesson plan.

Session 10 Breakout Presentations • Saturday • 2:05 - 2:55 p.m.

Central Lounge — ELEM, General

Hands-on Preschool Science

Josie Bergstrom, Virginia Beach Public Library; Kathleen DuBois, Virginia Beach Public Library

Learn how to plan, research, and implement hands-on science classes for preschoolers that encourage them to ask questions, experiment, explore, and solve problems. Create fun, multi-sensory learning opportunities that encourage parent and child interaction while keeping costs low and using easy-to-find materials. Learn how Preschool Science is connected to Every Child Ready to Read early literacy skill development, and then dive into Preschool STEAM with our hands-on demonstrations.

Room J — ELEM, General

2018 Science Standards of Learning: Elementary

Anne Petersen, VDOE; Myra Thayer, VDOE

This session is designed to provide elementary teachers and leaders with information concerning the 2018 Science Standards of Learning. Although science content has not changed significantly, the wording of the standards has been changed to focus on science concepts. This change was made with the intent of allowing teachers to focus on concept development in science. The skills and processes have been reorganized to support Profile of a Graduate and to aid teachers as they embed these skills into content instruction.

Room 8 — ELEM-MS, General

Engaging All Science Learners with PBLs, Inquiry & Literacy

Suzanne Kirk, Virginia Commonwealth University

Join teachers from VISTA at VCU's Middle/Elementary Literacy Integrated with Science (ELIS/MELIS) 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-8 Science SOLs and will integrate literacy with inquiry and hands-on science instruction. Sample lessons plans with tips and suggested booklists will be provided.

Room AB — ELEM-MS, General

Connecting Kids to Scientists

Ellen Peterson, Smithfield Middle School; Brianna Peterson, Smithfield Middle School

"A new study suggests that students who learn about famous scientists' struggles will perform significantly better in their science classes than students who are just given a laundry list of the same scientists' intellectual accomplishments." Using children's literature, we plan to introduce students to the "human" side of a particular scientist. Following exposure to the life of the scientist, a related hands-on activity helps students explore the work for which the scientist is known.

Room C — MS, Environmental Science, General

Capstone- Putting the Citizen in Citizen Science

Dianna McDowell, Old Donation School; Jared Fritzinger, Old Donation School

Capstone is a student centered interdisciplinary project between Civics and Earth Science at our school. In groups of 3-4, students identify an issue in the local community and track their growth as a citizen, and measure the impact of their actions attending to the three pillars of sustainability: environmental, social and economic.

Room 5 — MS, Biology/Life Science, Physics/Physical Science

"Do It Again!"

Sheryl McLaughlin, Jones Magnet Middle School; Sherri Mair, Jones Magnet Middle School

Come and watch as we demonstrate fun, engaging science demonstrations that can be used to "hook" your students on the content. We will show how easy it is to use common materials to excite students through "Do it again!" demonstrations. These demos will serve as a review of 6th – 8th grade content as preparation for our cumulative SOL.

Room 16 — MS, General

Deepening & Assessing Student Learning Through Writing

Rebecca Musso, Gayle Middle School; Heather Dudley, Rodney Thompson Middle School

Attendees will participate in an activity demonstrating a writing-in-science technique, leave with ready-to-use differentiated prompts/ideas for each grade level (6-8) and rubrics, and leave with brain-based research on the use of writing in the science classroom to share with colleagues.

Room 3 — MS, Engineering

Using Engineering Design Challenges to Reach Unique Learners

Erin Watson, Newport News Public Schools; Craig Doolittle, Newport News Public Schools

Engineering Design Challenges allow students to learn in a hands-on way, with personal differentiated instruction for every unique learner. Gifted students can push their own knowledge to further explore their world, while special education learners get excited to see they can be just as successful in learning as other students. This session will present you with numerous Engineering Design Challenges that can be implemented to help students explore 6th, 7th, and 8th grade science concepts.

Room 11 — MS-HS, Environmental Science

Our Wet Footprint: Teaching About Human Impacts on the Ocean

Dawn Sherwood, Henrico County Public Schools

In this hands-on/minds-on workshop, engage in interdisciplinary activities to explore global population trends and human interactions with our blue planet over the past 500 years and the future challenges for sustainable marine stewardship. Our journey will take us from the early days of whale hunting through the Industrial Revolution, the advent of modern agriculture and off-shore oil drilling to fish depletions and ocean warming. Engage in simulations, labs and discussion supporting SOLs.

Room 10 — MS-HS, Biology/Life Science

Evolution for Middle School Educators

Therese Whitehurst, Kempsville High School

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

Room 2 — MS-HS, Chemistry, General

Home Run! Aligning Reviews & Assessments for Student Success

Isabella Yearwood, Prince William County Schools

Writing appropriate learning targets can help with student success, however, ensuring your curriculum is aligned with the standards is key to student learning. In baseball, the player must hit all of the bases before getting a home run, similarly, in the classroom, daily activities, reviews, and assessments should be aligned to guide student comprehension and ensure achievement and learning. Learn how to adjust your reviews and assessments to increase student success and content retention.

Room 18 — HS, General

STEM Academy Networking

Andrew Jackson, Harrisonburg City Public Schools; Mike Pratte, Stafford County Schools;

This is an opportunity for leaders and teachers in STEM Academies across the state to share and network about challenges and successes of operating STEM Academies.

Room 14 HS, Biology/Life Science

A Beginner's Guide to Bioinformatics

Mark Levy, Roanoke Valley Governor's School for Science & Technology

We frequently hear about genomic sequencing and the numerous opportunities these data provide to researchers - but did you know that many of these resources are freely available to you and your students? This presentation will equip you with some fundamental concepts, tools, and resources necessary to learn more about bioinformatics techniques and bring them into your class.

Room H ALL GRADES, General

Strands and Dimensions: Looking at Lessons from New Angles

Benjamin Campbell, Longwood University; Matthew Bowman, Longwood University

Are you an early career teacher who wants guidance on robust planning? Or are you a seasoned veteran who could use a refresher on ways to make your curriculum less linear and one-dimensional? Either way, this session will provide guidelines for incorporating the three strands of NGSS—as well as three dimensions for conceptualizing science—into your labs, lessons, and activities. All content areas are welcome!

Room D ALL GRADES, General

Using Technology to Engage Scientists!

Kelly Clough, Louisa County Middle School

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.

Room 12 ALL GRADES, Environmental Science

Teaching Naturally: A Showcase of Outdoor Education Ideas

Charlie Filer, Glenvar High School

Glenvar High School is one of 73 Virginia Naturally Schools. Recognized for our exemplary efforts to increase the environmental awareness and stewardship of its students, Glenvar has developed community partnerships and creative fund raising ideas to further our mission. This presentation highlights some of our efforts including: Trout in the Classroom; Adopt-a-Stream; making and selling products made from on-campus beehives; and other ideas.

Amphitheatre ALL GRADES, Earth/Space Science, Environmental Science

VESTA Bi-Annual Meeting

Russell Kohrs, Virginia Earth Science Teachers Association, Margaret Greene, Virginia Earth Science Teachers Association

The Virginia Earth Science Teachers Association (VESTA) exists to serve all science teachers throughout the Commonwealth by supporting Earth Science, Geoscience, and Earth Systems instruction. Recently, NSTA released its statement supporting the importance of climate education. In addition, the Holocene was recently divided into three Ages, using climate changes to define the boundaries. Come and learn about the current Meghalayan Age, defined by the 4.2 ky event.

Auditorium ALL GRADES, General

Science and Language Assessment of All Students

Okhee Lee, New York University

Science instruction and assessment present challenges to teachers, especially involving student diversity and equity. This session will address how to design science instruction that incorporates formative assessment of science and language with all students including English learners. After engaging in a science investigation, participants will assess student artifacts in terms of both science and language, and consider how to use the assessment to inform instructional next steps.

Room 15 ALL GRADES, Earth/Space Science, General

Science Literacy: Supporting Learning of Content and Text

Joi Merritt, James Madison University; Sarah Lupo, James Madison University

Many students are struggling readers in science. In this session, we will talk about how literacy can help improve science learning. Research-based techniques will be introduced as to how to support students in Grades 3-12 in reading science texts. The focus will be on using texts in connection with science instruction, including how to select texts for the sciences and how to grapple with complexity when readers read below grade level.

Room 17 ALL GRADES, General

National Geographic Teacher Certification

Becky Schnekser, Cape Henry Collegiate

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.