

**VAST VIRTUAL PROFESSIONAL DEVELOPMENT INSTITUTE**  
**NOVEMBER 12-14, 2020**  
**PRE-RECORDED PRESENTATIONS**

(All presentations are available throughout the PDI)

**Exploring Earth's Resources with Ag in the Classroom**

Session 14 Room A Grade Level: ELEM Content: Environmental Science, General  
Lynn Black, Agriculture in the Classroom

Join the staff from Agriculture in the Classroom for this hands-on session to explore Earth's natural resources using scientific investigation with your elementary students. Engaging lessons will demonstrate the importance of soil and water. Additionally, participants will have the opportunity to make their own bio-plastic as they discover the ways in which the Earth's resources impact their daily lives. Teachers in attendance will receive AITC curriculum and resources.

**Differentiating an Elementary Science Lesson**

Session 14 Room B Grade Level: ELEM Content: General  
Mindy Gumpert, Old Dominion University

The majority of students with disabilities spend their day in the general education classroom. General education teachers often feel ill-prepared to teach these diverse learners. In this session, a special education co-teacher will revise an elementary science lesson to demonstrate how to include tried-and-true differentiation strategies and evidence-based practices into science instruction. The session will provide teachers with differentiation strategies that can be applied to any lesson.

**Culturally Relevant STEM Through Literature and Lessons**

Session 14 Room C Grade Level: ELEM Content: General  
Angerina Jones, Chesapeake Public Schools

In this session, attendees will learn about and engage in literature and lessons that are culturally responsive. The resources discussed in the session will cover each area of STEM. Primary level science educators will leave with culturally relevant book titles and sample lessons they can use in their classrooms and share with their colleagues.

**Hello Science, Meet Creative Arts!**

Session 14 Room D Grade Level: ELEM Content: General  
Jenna Mercury, ExploreLearning

In this session, K-5 educators will learn how to get creative with their palette through the exploration of various multi-sensory, hands-on, creative arts activities that support the Virginia Science Standards of Learning. The teachers will walk away with artistic activities that can be easily interwoven into their day. So, hello Science, meet Creative Arts! (Commercial Presentation)

**The Ultimate K-2 Science Lesson in a Digital Minute!**

Session 14 Room E Grade Level: ELEM Content: General  
Jenna Mercury, ExploreLearning

K-2 science shouldn't make you feel like you are spinning out of control! Come see how science can be successful when taught in a digital format. Walk away realizing that even though classrooms may be chaotic, a digital minute (or 5!) can lead to a mastery of science concepts! (Commercial Presentation)

**Understanding Environmentally Sustainable Roof Design**

Session 15 Room A Grade Level: ELEM Content: Earth/Space Science, Environmental Science  
William McConnell, Virginia Wesleyan University  
Elizabeth Malcolm, Virginia Wesleyan University

Roofs. Our students see them every day and they can also provide an engaging inquiry-based lesson. This presentation shares an easy way for your students to gather data on various roof types to explore and understand urban heat island effect. Digital lesson materials are shared and possible collaborative citizen-science opportunities are also described.

### **Crash Boom Chemistry**

Session 15 Room B Grade Level: ELEM-MS Content: Chemistry, Physics/Physical Science  
Angelo Bonilla, James Beckinridge Middle School  
Brian Kreppeneck, Lucy Addison Middle School

Struggling with how to complement your science lessons with engaging demonstrations? Allow us to share simple demonstrations for the science class room that will engage and connect science to the world around them. Attendees will engage in simple activities and be provided with a written copy of the demonstrations performed during the session.

### **NASA eClips VALUE Bundles -Something for All Learners**

Session 15 Room C Grade Level: ELEM-MS Content: General  
Joan Harper-Neely, National Institute of Aerospace  
Sharon Bowers, National Institute of Aerospace

VALUE Bundles -Something for All Learners

NASA resources have been designed to support Universal Design for Learning (UDL) in science classrooms. A variety of hands-on activities, interactive sites, and multi-media resources to meet the needs and learning styles of all learners will be shared.

### **Teaching Scientific Method with Children's Literature Books**

Session 15 Room D Grade Level: ELEM-MS Content: General  
Mythianne Shelton, Fries School, Grayson County

Need ideas to help with teaching the scientific method? What better way to get your students excited about science than through reading. This presentation shares how to incorporate children's literature books such as Creepy Carrots and Charlotte the Scientist is Squished into your science lessons. The activities will include bending a carrot, balloon rockets, and soap bubble challenge. Great for upper elementary and middle school students, but activities can be adapted for any grade.

### **Wind Can Do Work**

Session 15 Room E Grade Level: ELEM-MS Content: Physics/Physical Science, General  
Kimberly Swan, National Energy Education Development Project

With an increased focus on engineering and design instruction in the classroom, we've got some hands-on, critical thinking challenges designed for students to work as engineers in a competitive setting! Come learn about wind energy while building your own anemometer and then design a windmill to see how wind can do work by lifting the most paperclips. Leave with the knowledge, activities, and teaching strategies on how wind generates electricity and factors that affect its ability to do work.

### **Online lesson: Cells-The Structure of Life**

Session 16 Room A Grade Level: MS Content: Biology/Life Science  
Susan Booth, VAST

Life Science: Biological levels from simple to complex

Understand how an organism has levels of complexity-cells, tissues, organs, systems which support the needs of a multicellular organism.

### **Mission to Mars: Gamifying Environmental Science**

Session 16 Room B Grade Level: MS-HS Content: Environmental Science, General  
Colin Bouchillon, Manassas Park High School  
Katherine Maurer, Manassas Park High School

Motivating students is a struggle, especially when it comes to environmental topics that students may not think much about. But what if your class was a real life game with storylines and award rankings? Learn how to redesign your environmental science course to be more engaging and entirely student-driven! Topics include course organization, game layout, assignments, and grading.

### **Engaging Inquiry: Pre-service Teachers Share Tested Lessons**

Session 16 Room C Grade Level: MS-HS Content: General  
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.

### **Motivating Students to be Cognizant Learners**

Session 16 Room D Grade Level: MS-HS Content: General  
Amira Elsiyah, Freedom High School, Prince William County

Research has proven that motivated students have increased engagement, self-efficacy and overall better scores. Yes, not every single student of ours will be a scientist, but every one of them is currently taking science (Which let's be honest, can get challenging). This presentation is about showing compassion and understanding towards our students. When they see us invested in their education, they start caring, too.

### **More Strategies to Actively Engage Every Student**

Session 16 Room E Grade Level: MS-HS Content: General  
Robbie Higdon, James Madison University

Session participants will have the opportunity to participate in active, meaningful learning experiences that engage all students. Current pre-service teachers will provide several examples of "tried and true" strategies that can be implemented in any classroom. Use of these strategies can assist teachers in facilitating learning opportunities that can result in deeper understanding and higher levels of mastery for all students.

### **Order Up a Helping of Forensics, With a Side of Maggots!**

Session 17 Room A Grade Level: MS-HS Content: Biology/Life Science, General  
Jeff Lukens, Texas Instruments  
Jamila Gadsden, Texas Instruments

From helping to determine the time of a victim's death to analyzing DNA samples from crime suspects, this workshop has it all! Come get your hands wrapped around the STEM of crime solving!

### **NASA's Artemis Generation: Moon to Mars**

Session 17 Room B Grade Level: MS-HS-COL Content: Biology/Life Science, Engineering  
Anne Weiss, NASA Langley Research Center

This session will provide a brief overview of current NASA student design challenges for inspiring the next generation of explorers to the Moon and Mars, including but not limited to NASA Student Launch and NASA WEAR (Wearable Equipment for Averting Radiation) STEM Challenge. Local teachers will also showcase their participation in a NASA design challenge with their students.

### **USA Biolympiad in the Time of Covid: A We did it Story!**

Session 17 Room C Grade Level: HS Content: Biology/Life Science  
Kathy Frame, Papillion Education Services LLC

Participants will follow the USA Biolympiad competition from cancellation in March to how a mighty few made it happen in June and July. This enabled the USA to be represented in the Japanese Virtual International Biology Olympiad Challenge and more!

### **At-Home Chemistry Labs**

Session 17 Room D Grade Level: HS Content: Chemistry, Math in Science  
Verlese Gaither, Wakefield High School

This presentation is for the chemistry teacher who wishes to provide students with a lab experience that they may do "At-Home" in the event that instruction is provided virtually. The presentation will detail labs that cover the Virginia state standards of learning, with accompanying resources to support learning such as accessible technology.

Attendees will be provided with a copy of the framework, worksheets, sample labs, and technology recommendations.

### **Modeling Chemical Reaction Types**

Session 17 Room E Grade Level: HS Content: Chemistry  
John Garrett, Lab-Aids

In this activity from the Natural Approach to Chemistry program, participants investigate representative examples of major reaction types, including single- and double-replacement, precipitation, oxidation-reduction, and more. The written directions model safe laboratory procedure, and the analysis questions explore applications of these reactions in the chemistry of the human body and the environment. (commercial presentation)

### **Guiding Students Through Literature Review & Paper Writing**

Session 18 Room A Grade Level: HS Content: Scientific Literacy  
Heather Overkamp, I.C. Norcom High School

This is a webinar that I recorded as a Society for Science & the Public Advocate. It is about walking your students through the literature review process, helping them become more scientifically literate, and preparing their papers and paperwork for submission to several science and engineering fairs. It is based on the premise that the students are starting from scratch, in that they don't have a lot of experience with experimental or engineering design for an independent research project.

### **Using Virtual Tools to Maximize your Classroom**

Session 18 Room B Grade Level: HS Content: Chemistry/General  
Erica Thomas, Church Hill Academy

Learn how to utilize the tools in the google education suite to upgrade your science classroom experience. Engage your students in more independent learning through google tools like docs, sheets, slides, and drawing, as well as more explorative tools like tour builder, google sites, blogger, classroom and youtube. Also learn how to get your students involved in their learning through online resources like PHet, Ck-12, quizlet, quizizz, and kahoot.

### **Academic Controversy to Enhance Understanding in Science**

Session 18 Room C Grade Level: HS Content: General, Science Literacy  
Angela Webb, James Madison University

To be scientifically literate, it is imperative students understand, apply, and critically examine key ideas and practices. This can be fostered via debate; yet not all debated topics are scientifically controversial. In this session, JMU preservice teachers model and share ideas for introducing debate via constructive, cooperative, and academic controversy. Co-presenters: M. Almond, S. Elbon, K. Hefele, A. Melendez, C. Osborn, K. Reibsome, K. Satterwhite, V. Segerstrom, N. Slater, & P. Smith

### **Earth Science Reference Tables**

Session 18 Room D Grade Level: HS-COL Content: Earth/Space Science  
Bonnie Keller, Colgan High School

Teach your students Earth Science using a set of diagrams and references that are made just for VA Earth Science students. This is modeled after the ESRT from New York. As you teach the diagrams and graphs in the packet, you are teaching essential content, as well as the skills of reading those graphics. Boost your students' ability to decipher new and "scary looking" graphics as you utilize a set of handouts that teaches them and boosts their confidence.

### **We've Got 99 Problems, but Solving a STEM Case is Not One!**

Session 18 Room E Grade Level: HS-COL Content: Interactive STEM Cases  
Jenna Mercury, ExploreLearning

We don't provide HS students with in-depth, practical, concepts and practices. Interactive STEM Cases will empower our students to jump into the role of a real STEM professional tasked to solve real-world problems. They will view interactive case studies, form and test ideas and find solutions. BYOD with any browser to jump into the program too! (Commercial Presentation)

### **Measuring Transpiration in Plants**

Session 19 Room A Grade Level: HS-COL Content: Biology/Life Science  
Mike Renfroe, James Madison University  
Robbie Higdon, James Madison University

Students often lack an understanding of the importance of plants to life on our planet. Plants provide many ecosystem services including carbon sequestration, oxygen production, soil stabilization, water purification, and provision of food, shelter, fiber, and medicines. This laboratory investigation focuses on the process of transpiration and can serve as a lesson on plant anatomy and physiology, on environmental effects on plants, or on data collection, analysis, and presentation.

### **Isotope Discovery Kit & Chart of Nuclides Lesson**

Session 19 Room B Grade Level: HS-COL Content: Chemistry  
Jen Sharp-Knott, Floyd Co. High School

Chemistry students often struggle with the concept of isotopes. But Carbon isn't just Carbon - it can be Carbon-12 or Carbon-14 or one of many other isotopes. Helping students understand this builds on the foundation of understanding what neutrons are and what function they serve in atoms. In this pre-recorded session, the Isotope Discovery Kit will be showcased and a lesson plan (that can be done with the kit or independent of it) to introduce the Chart of Nuclides will be explained.

### **STEM Majors in Sustainability, Environment, & Conservation**

Session 19 Room C Grade Level: HS-COL Content: Earth/Enviro/Bio/Chem/Phys/Eng  
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.

### **Data Interpretation and Explanation - Challenge Them!**

Session 19 Room D Grade Level: HS-COL Content: Biology/Life Science, Environmental Science  
Joleen Zackowski, Tidewater Community College

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

### **Teach Me On MY Terms! Transform Learning & Tear Off Labels**

Session 19 Room E Grade Level: ALL GRADES Content: Earth/Space Science, General  
Tammy Bartlett, Dinwiddie Middle School  
Caitlyn Edwards, Dinwiddie Middle School  
Tina Winesett, Dinwiddie Middle School

Changing up instruction to reach all students has never been easier! We'll show you how to engage students on THEIR terms and take your science lessons to the next level. Easy hands on experiments, mind blowing demonstrations and room transformations will have your students excited to come to class. Step outside your comfort zone and let us show you how to shake things up!

### **Project Plant It! Teaches Students about Trees & Pollinators**

Session 20 Room A Grade Level: ALL GRADES Content: Environmental Education  
Melanie Rapp Beale, Dominion Energy

Dominion Energy's Project Plant It! is adding an exciting new pollinator program to its popular tree-planting program. VAST members will be the first audience to hear the news and learn how to sign up for wildflower seed packets that

attract bees and other pollinators as well as the redbud tree seedlings. Don't miss this buzz-worthy opportunity to teach your students about environmental sustainability with Project Plant It! (Commercial presentation)

#### **Flip that Feedback**

Session 20 Room B Grade Level: ALL GRADES Content: General  
Kristen Boudreau, Prospect Heights Middle School  
Brandi Shumake, Prospect Heights Middle School

Want to learn to identify student learning gaps before the assessment, make real connections with students, and allow students to experience success? Wondering how this can be done in one class period and be differentiated for each student? This session will teach you how to use google forms and slides to create a flipped formative lesson that utilizes checkpoints and leveled assignments/grouping for personalized learning Leave with the tools needed to create your own flipped formative.

#### **Make Your Virtual Classroom a "Bit-Moji" Fun**

Session 20 Room C Grade Level: ALL GRADES Content: General  
Kristen Boudreau, Prospect Heights Middle School

This session will help teachers create an interactive virtual science classroom using google slides and personalized with their own bit-moji. Virtual classrooms are fun and can be filled with interactive elements such as videos, virtual labs, instruction, resources, assignments, virtual field trips, and more! This isn't just any old hyperdoc! Best of all your virtual classroom can be updated for the time of year, material you are covering, or special school events. It's fun easy, and interactive.

#### **Reimagining the 5E Model through Blended Learning**

Session 20 Room D Grade Level: ALL GRADES Content: General  
Cierra Coyner, HCPS High School / Hanover County Public Schools  
Jacquelyn Calder, HCPS High School / Hanover County Public Schools  
Brendan Meng, HCPS High School / Hanover County Public Schools  
Brennan Neal, HCPS High School / Hanover County Public Schools

As school continues to shift towards more technology-integrated classrooms, the push for blended learning has become more prevalent. Blended learning merges both online and face-to-face instruction, giving students some choice in path, pace, and place. The 5E Model provides a foundation for lesson delivery, which easily adapts to a blended environment. This session will provide an overview of blended learning, tools and methods for implementation and resources to use in your classroom.

#### **Watershed Management: A Local Focus**

Session 20 Room E Grade Level: ALL GRADES Content: Earth/Space Science, Biology/Life Science  
Shanan Hambrick, Clarke County High School  
Yvonne Rivera, Clarke County Public Schools

How do you teach on improving your local watershed with your normal curriculum? Learn how to integrate projects (some classroom-based and others hands-on) into your normal lesson plans. Project ideas range from stream monitoring to soil management, and everything in between. No matter the curriculum, local watershed education can be included.

#### **Using Place-based Learning to Teach Beyond the Test**

Session 21 Room A Grade Level: ALL GRADES Content: Place-based Learning  
Robbie Higdon, James Madison University  
Cindy Klevickis, James Madison University

Participants in this session will construct a deeper understanding of the content presented in state curriculum standards; view experiential learning events as a critical aspect of science education in their classrooms; and discover how investigations of local natural phenomena can serve as the foundation on which investigations of more distant or abstract phenomena can be constructed through the lens of place-based education.

### **Leadership in an Online Environment**

Session 21 Room B Grade Level: ALL GRADES Content: General  
Stephanie Hinshaw, American College of Education

Leaders are charged with creating supportive and safe environments for their teams. Most of us know what this looks like in a physical space, but it can be difficult to identify in an online workplace. This session explores practical approaches leaders can use to create productive and dynamic virtual work environments.

### **Using Microsoft Word Apps to Enhance Your Science Class**

Session 21 Room C Grade Level: ALL GRADES Content: Technology in Science  
Paula Irwin, Stonewall Jackson High/Prince William County Schools

Many of you have been using Microsoft Word since the 90s. However, when is the last time you scrolled through the toolbar of Word to see all the applications that are now available? This session is to point out the overlooked awesome features Word has to offer to enhance your science classroom instruction and better prepare your students for the future in technology.

### **Beyond Experiments: Integrating Science and Literature**

Session 21 Room D Grade Level: ALL GRADES Content: Science and Literacy  
Brandi Ivester, Booksource

While students learn science best by doing, integrating literacy helps students connect experiments they're doing with facts and stories they're reading. In this presentation, viewers will gain concrete strategies for incorporating fiction and nonfiction books into science instruction and receive title suggestions tailored to their grade-band. Educators can immediately apply these ideas to help students connect course content with real world people, applications, and experiences. (Commercial Presentation)

### **A Whole New World: Blended Learning with Google Earth & Maps**

Session 21 Room E Grade Level: ALL GRADES Content: Earth/Space Science, Environmental Science  
Chris Kaznosky, Central High School / Shenandoah County

Blended learning gives students some control over the time, place, path, and pace of their learning, with Google Earth, Maps, My Maps, and Tours providing a means for helping students expand their content knowledge. In this presentation, attendees will use these Google tools to create labs that students can complete in a face-to-face, blended, or online environment. In addition, sample lessons for astronomy, environmental science, geology, meteorology, and oceanography will be provided.

### **Classroom Reptiles - Why and How to do it RIGHT**

Session 22 Room A Grade Level: ALL GRADES Content: Biology/Life Science, General  
Bonnie Keller, Colgan High School

Many teachers keep reptiles in their classrooms, or want to. This session will review the WHY - as in, why should you consider them for the classroom - and the HOW - as in how to do it properly. Unfortunately, many classroom reptiles are NOT kept properly, and this sets a poor example to others who may want to keep them at home. I will show you some of the species that are most appropriate for classrooms, and what you need to set them up.

### **Virtual Field Experiences: Free Tools for Virtual Learning**

Session 22 Room B Grade Level: ALL GRADES Content: Earth/Space Science, Environmental Science  
Russell Kohrs, Massanutten Regional Governor's School for Environmental Science and Technology

Virtual learning is upon all of us, field trips are limited or cannot occur, and overall opportunities for students to be in the outdoors with their teachers is drastically reduced. How can you overcome this deficit of outdoor time with your students and at the same time increase field trip accessibility for differently-abled students? This presentation will focus on some really useful visualization tools you can use, for free, to create some innovative and fun virtual field experiences.

### **The Instructor's Presence in the Online Classroom**

Session 22 Room C Grade Level: ALL GRADES Content: General  
Don Kirk Macon, American College of Education

Supporting online students in the virtual environment is one of the hallmarks of a successful online instructor. In this webinar, the following aspects will be covered: setting a warm and welcoming environment, stressing the importance of communication, providing robust feedback, and challenging students to use tools such as organization and time management to be successful. This webinar is full of tips and suggestions.

### **How to Talk with an Astronaut 250 Miles Above You**

Session 22 Room D Grade Level: ALL GRADES Content: Earth/Space Science  
Kathy Lamont, Antietam Elementary/Prince William County

Learn about how to talk with an astronaut through a free program called ARISS (Amateur Radio on the International Space Station)! This program allows your school or organization the opportunity to ask questions to an astronaut as they travel above you. This session will review the proposal for possible contact, discuss how to integrate space science into your curriculum, and a little bit about how amateur radio works. Appropriate for all grade levels, K-12.

### **Spark Inquiry! Primary Sources from the Library of Congress**

Session 22 Room E Grade Level: ALL GRADES Content: General  
Sherry Levitt, Teaching with Primary Sources, Virginia  
Cynthia Sz wajkowski, Teaching with Primary Sources, Virginia

Intriguing primary source images, notebooks, letters, historical newspaper accounts, records and more can draw students in, lead them to fact check, hypothesize, argue from evidence and engage in scientific thinking and the processes of interpreting fact and meaning. The Library of Congress' unparalleled resources span every field of science and offer compelling entry-points to building scientific literacy skills for all students.

### **Using Google to Create Engaging Digital Lessons**

Session 23 Room A Grade Level: ALL GRADES Content: Biology/Life Science, Environmental Science  
Stacey Ludington, Stafford High School  
Natasha Neagle, Stafford High School

Using Google for Education products to create online lessons that engage students through inquiry, investigation, modeling and collaboration. Excellent for blended classes, flipped classes, differentiating lessons, distance learning, absent or homebound students, and sub plans. Gain access to templates and examples through Google Drive.

### **Teaching Students to Love Learning Geology Online**

Session 23 Room B Grade Level: ALL GRADES Content: Earth/Space Science, General  
Rose McGroarty, Virginia Tech

How do you teach geology online? As science courses around the globe turn to virtual experiments, dissections, and projects, others are left wondering how to teach online material naturally best taught in person. Some ways to teach geology/earth science online are to include Google Earth activities, rock hunts, and virtual field trips. Activities incorporating both exotic and familiar locations help students appreciate and love the geology in the world around them.

### **NO Lab Coat Required - Crowd Sourced Research Projects**

Session 23 Room C Grade Level: ALL GRADES Content: Biology/Life Science, General  
Karen Neal, Reynolds Community College

Research requires faculty to conquer several obstacles including procurement of funding, time commitment, the need for specialized equipment, and limited student knowledge base. Most of these are so insurmountable that faculty just forego this aspect of science in the classroom. Crowd sourced research projects may provide a solution for many science courses and allow faculty to incorporate research into the curriculum.

### **Look what we FOUND!!!**

Session 23 Room D Grade Level: ALL GRADES Content: Environmental Science, Geography  
Judith Painter, Andrew Lewis Middle School

Online or in-person you want engaged and active students. Why not use iNaturalist and the Seek app to get your students excited about the natural world locally, nationally, and globally?!? During the Spring, my students stayed in touch with the natural world in Geography. Participants will receive lessons, resources, and materials to recreate the activities immediately in their class settings be it online or in-person. Materials will be shared for all levels of connectivity or lack thereof.

### **Supporting K-12 STEM using remote learning kits in Virginia**

Session 23 Room E Grade Level: ALL GRADES Content: Environmental Science  
Hannah Patton, Virginia Tech  
Molly Hackley, Virginia Tech  
Thea Torrisi, Virginia Tech  
Erika Bonnett, Virginia Tech

Our project goals are to design, develop, distribute, and assess educational kits focused on water science to K-12 students in VA. We will demonstrate the kits and discuss the process, including: identifying SOL-aligned activities that K-12 students can conduct at home and are appropriate for multiple grade levels; designing methods for kit distribution and assessment; and collaborating with teachers and extension agents to distribute kits and collect data on content and accessibility.

### **National Geographic's Geo-Inquiry Process**

Session 24 Room A Grade Level: ALL GRADES Content: General  
LoriAnn Pawlik, Colgan High School PWCS

The Geo-Inquiry Process relies on using a geographic perspective, offering a unique lens to analyze space, place, and the interconnections between both the human and natural world. Using both a geographic perspective and the Geo-Inquiry Process students begin to connect complex components, see patterns, and make connections that change their communities. Curious? Come see how to engage your students!

### **PBLs: Studying Science Using Mapping**

Session 24 Room B Grade Level: ALL GRADES Content: Earth/Space Science, Environmental Science  
LoriAnn Pawlik, Colgan High School, PWCS

Projects and Problems... your students can engage and explore solutions across multiple content areas – saving you time. Our focus will be science SOLs - space and water - and you'll learn how easy it is to wrap maps and data into your teaching. Resources available.

### **Special Education in Hands on/Higher Level Science**

Session 24 Room C Grade Level: ALL GRADES Content: General  
Michelle Plunkett, Loudoun County Public Schools

Have you ever wondered about making sure your classroom is fully immersive and accessible for all students? Come learn some hints, tips, tricks, and network with others for resources. Ms. Plunkett is a blind physicist and teacher who has helped many make sure all students can participate safely and confidently in all levels of science!

### **NASA Cloud Resources for Virtual and In Person Learning**

Session 24 Room D Grade Level: ALL GRADES Content: Earth/Space Science  
Angela Rizzi, NASA Langley Research Center

Are you wondering how to do hands-on science with students if you are not together in a classroom? Join a discussion of a range of options for using NASA Cloud resources in virtual, hybrid, face-to-face, formal and informal settings. The resources presented support active participation in the GLOBE Clouds citizen science effort even from inside! Lessons learned from summer 2020 efforts will be shared along with tips for success.

### **Disrupting Science**

Session 24 Room E Grade Level: ALL GRADES Content: General  
Becky Schnekser, Cape Henry Collegiate

Science is in need of a shake up; disruption, especially as we prepare them for career paths in the world of science. Authenticity, relevance, and application based experiences are foundational to understanding scientific concepts--

let's explore this together by tapping into natural curiosity, field and expedition science, and the mindset of an explorer. Let's disrupt the science model together and make science what it should be; real, authentic, and a true experience.

### **Computer Science Integration for Equity**

Session 25 Room A Grade Level: ALL GRADES Content: Computer Science  
Perry Shank, CodeVA  
Anita Crowder, CodeVA  
Bryan Wallace, CodeVA

Knowledge of the underlying principles and impacts of computer science is a necessity for all STEM educators and students. This presentation will discuss the curricular strategy of integration as a means to provide equity for all of Virginia's students and provide a deep dive into how the VA Computer Science SOLs prepare students for careers in STEM.

### **The Sun and Its Energy**

Session 25 Room B Grade Level: ALL GRADES Content: Physics/Physical Science, General  
Kimberly Swan, National Energy Education Development Project

Come investigate with UV beads, build a solar oven, and explore how photovoltaic (PV) cells work! These hands-on activities let you see just how solar energy can be used in many different ways! You'll leave with a better understanding of radiant energy to share with your students.

### **How the MWEE Flows**

Session 25 Room C Grade Level: ALL GRADES Content: Teacher Prep and PD per Policy  
Melinda VanDevelder, Virginia Commonwealth University, School of Education - Teaching and Learning

There is a tremendous need for sound environmental policy in public schools and successful outcomes of state recommended MWEEs primarily rests on the shoulders of classroom teachers who may not succeed in meeting environmental literacy requirements. This research focuses on survey data of perceived MWEE success rates of middle school and high school science teachers and investigates potential areas of need reported by teachers in order to fulfill environmental education requirements.

### **NASA Digital Badging Resources**

Session 25 Room D Grade Level: ALL GRADES Content: General  
Anne Weiss, NASA Langley Research Center

This session provides an overview of current NASA digital badges for educators and students, as well as K-12 teachers sharing their experiences with digital badges. NASA's Office of STEM Engagement connects individuals with high-quality resources that leverage the Agency's unique assets while inspiring the next generation of explorers. NASA digital badges offer content in areas like Lunar Phases, Culturally Responsive Teaching (CRT), and the Next Gen STEM Themes (e.g., Small Steps Giant Leaps).