



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

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[VAST.Org](http://VAST.Org)

Check the web for news, conference updates, registration, and forms.

# The Science Educator

Spring 2019

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Vol. 67, No.5



## 2019 ANNUAL PROFESSIONAL DEVELOPMENT INSTITUTE

**November 14-16, 2019**

**Hotel Roanoke and Conference Center, Roanoke, VA.**



Dr. Mike Gil, Ph.D.  
Research Fellow, Univ. of CA.  
& NOAA

**"How Science Can Save  
the World"**



Dr. Kenneth Wesson, Ph.D.  
Educational Consultant: Neuroscience

**"STEM: if Students Don't Learn  
the Way We Teach, Then Why  
Not Teach the Way They Learn?"**



Dr. Robert Corbin, Ph.D.  
Director-Global STEM Initiatives,  
Discovery Education Assoc. Professor  
Univ. of NC.

**"STEM Dispositions Create  
Future Leaders and Innovators"**

### GENERAL SESSION SPEAKERS

See pages 8-10 for more information about each of our inspiring speakers.

The 2019 VAST Professional Institute will focus on the theme: *STEM Starts with Science*. The theme examines the role of science in the United States and in public education. We will share ways that will make your classroom science more engaging and motivating. Connections between science and engineering, technology, and mathematics will be examined and strengthened our classrooms. We will also be preparing teachers to engage with the new *2018 Science Standards of Learning* and the skills in the new *Profile of a Graduate* that are an integral part of the new standards.

#### Highlights of the VAST Professional Development Institute

The 2019 PDI will offer presentations related to our theme, "Stem Starts with Science", as well as concurrent session presentations in all subject areas for grades K-12.

There will be three general sessions featuring speakers who will challenge you with up-to-date scientific

discoveries and instructional strategies.

You will interact with vendors in our Exhibit Hall and collect samples of new instructional materials. Additionally, you may shop for cool science themed items for your classes while you explore cutting-edge technologies.

**UPDATED** information about the PDI is found on the **PDI page** on the VAST website. **Visit often.**

In this newsletter check out the:

- Schedule-at-a-Glance on page - 4
- General Session Speakers - pages 8 - 10
- Thursday Donna Sterling Institute - page 7
- Thursday VDOE Workshops - page 6

Information and Registration are on-line:

- **VAST PDI Registration**
- **Donna Sterling Institute**
- **VDOE Workshops**
- **Hotel Roanoke online reservation**



**From the Executive Director**

## **Please consider getting involved with VAST! WE need you to ....**

Recruit other members;  
Share excitement by writing articles for the newsletter and/or  
journal;  
Move forward;  
Be your best;  
Excel in everything;  
Register for the PDI.  
You can be the "S" in VAST!

Vivacious,  
Amazing,  
Science Teacher!

**YOU ARE the "S" that Leads STEM.**

*Susan Booth,* **Ed.S.**  
**Executive Director**

**November 14-16,  
2019**



**Hotel Roanoke and  
Conference Center,  
Roanoke, VA.**

### **Menu**

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Click "Menu" to return to this page.

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**Tom Fitzpatrick**  
**VAST President 2019**

As we finish another school year and contemplate a new one, it's time to reflect on our performance and consider how we can better prepare our students for life in a rapidly changing world. When I started teaching, knowledge came from the textbook, the encyclopedia, and from me as the teacher. It was often a long process to acquire the facts. Times have changed. Our students can use a search engine to get all that information almost immediately. So what is our role as science educators? I believe that the Virginia Board of Education gave us clear goals in the *Profile of a Virginia Graduate*- they are called the five "C's." Yes, the facts and data are readily available- but so is lots of misinformation. Climate change, vaccination, sources of energy- what are the facts and what is opinion? It's our role to be sure that our students are taught how to be **critical thinkers**- how to evaluate those facts, separate opinions from facts, and then make informed decisions based on the facts. We must teach them- and allow them- to become **creative thinkers**, solving problems by **collaborating** with each other using the clear **communication** skills we have taught them. Only then will they be able to practice good **citizenship**. Thomas Jefferson has been quoted as saying that the role of education is to produce informed citizens. Our role as science educators is to produce capable, thinking citizens ready for careers undreamed of and capable of solving problems years in the making.

I hope you will be able to join us in Roanoke for the PDI this fall. Our keynote speakers will all be addressing the need to create critical and creative thinkers- and giving us tools and inspiration to get the job done.

*Tom Fitzpatrick*

**VAST President, 2019**

*\*In Facebook search for "Virginia Association of Science Teachers" and "Like" the VAST site.*

# VAST SCHEDULE AT A GLANCE - 2019

## Wednesday, November 13, 2019

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

## Thursday, November 14, 2019

8:00 a.m. Ticketed Donna Sterling Institute *(Separate from PDI)*  
 "The Power of Problem-Based Learning for Teaching STEM"  
 Sterling Institute Continental Breakfast and Check in  
 8:30 a.m. - 3:00 p.m. Sterling Institute Presentation and Lunch

2:30 p.m. - 5:15 p.m. PDI Registration Desk Open  
 3:15 p.m. - 5:00 p.m. Ticketed PDI SOL Update Workshops Sponsored by VDOE  
*(Separate workshops for ELEM., M.S., & H.S. teachers)*

5:30 p.m. - 6:45 p.m. **General Session I – Welcome to the PDI**  
 Speaker: Dr. Mike Gil, University of California Santa Cruz & NOAA  
 "How Science Can Save the World"  
*(Door prize giveaway at the end of the session)*

6:45 p.m. - 7:30 p.m. Regional Science Challenge  
 7:30 p.m. - 9:00 p.m. Night with the Exhibitors *(Sponsored by WorldStrides)*



## Friday, November 15, 2019

7:15 a.m. - 5:00 p.m. Registration Desk Open  
 7:30 a.m. Continental Breakfast in the Exhibit Hall  
 7:30 a.m. - 10:30 a.m. Exhibit Hall Open  
 8:30 a.m. - 9:20 a.m. Concurrent Session 1 Breakout Presentations  
 9:35 a.m. - 10:25 a.m. Concurrent Session 2 Breakout Presentations  
 10:40 a.m. - noon General Session II - Business Meeting  
 Speaker: Dr. Kenneth Wesson, Educational Consultant Neuroscience  
 "STEM Students Don't Learn the Way We Teach, Why Don't Not Teach the Way They Learn?"  
*(Door prize giveaway at the end of the session)*

Noon - 1:00 p.m. Ticketed Buffet Lunch  
 12:30 p.m. - 6:00 p.m. Exhibit Hall Open  
 1:10 p.m. - 2:00 p.m. Concurrent Session 3 Breakout Presentations  
 2:15 p.m. - 3:05 p.m. Concurrent Session 4 Breakout Presentations  
 3:20 p.m. - 4:10 p.m. Concurrent Session 5 Breakout Presentations  
 4:25 p.m. - 5:15 p.m. Concurrent Session 6 Breakout Presentations  
 6:15 p.m. - 7:00 p.m. Ticketed Dinner *(Cash Bar)*  
 7:00 p.m. - 8:15 p.m. Speaker: Dr. Ken Miller followed by Awards Ceremony  
 8:30 p.m. - 10:00 p.m. DJ and Auction



## Saturday, November 16, 2019

7:30 a.m. - 10:30 a.m. Registration Desk Open  
 7:30 a.m. Continental Breakfast in the Exhibit Hall  
 7:30 a.m. - 11:15 a.m. Exhibit Hall open  
 8:30 a.m. - 9:20 a.m. Concurrent Session 7 Breakout Presentations  
 9:35 a.m. - 10:25 a.m. Concurrent Session 8 Breakout Presentations  
 10:25 a.m. - 11:15 a.m. Last Chance to Visit the Exhibit Hall - Exhibitor Door Prizes  
*(No other events scheduled, all exhibitors will remain open until 11:15)*

11:00 a.m. - 11:25 a.m. Pickup Ticketed /Box Lunch to eat during General Session III  
 11:30 a.m. - 12:45 p.m. General Session III - Meet your new VAST officers  
 Speaker: Dr. Robert Corbin, Discovery Education  
 "STEM Dispositions, Create Future Leaders and Innovators"

*(Door prize giveaway at the end of the session),*  
 1:00 p.m. - 1:50 p.m. Concurrent Session 9 Breakout Presentations  
 2:05 p.m. - 2:55 p.m. Concurrent Session 10 Breakout Presentations  
*(gift card giveaway at the end of each Presentation of concurrent session 10- sponsored by TBA)*







## Call for 2020 Annual Nominations for VAST Board of Directors!

Are you looking for a challenging leadership position that impacts local, state, and national science education? Would you like to serve the association that serves you? The VAST Nominating Committee is currently accepting nominations from the VAST membership who are in good standing for the following positions on the 2020 VAST Board: **President-elect, Treasurer, Regional I Director, Regional III Director, Regional V Director, and Regional VII Director.** (Please see regional Map linked below to find your region.)

The committee consists of Robin Curtis, Andrew Jackson, Shirley Sypolt and Dr. Jacqueline McDonnough (chair). One may also contact Jackie directly at 804-319-6171. Thank you for your consideration.

Nominations can be sent to any member of the Nominations and are requested by Sunday, **June 30, 2019.**

Just take a few moments to complete the nomination form below and email to [nominations@vast.org](mailto:nominations@vast.org).

**What is the VAST Mission?** The Virginia Association of Science Teachers (VAST) is a community of Science educators whose mission is to: • inspire students, • provide professional learning opportunities, • build partnerships, • advocate for excellence at the school, local, state and national level.

### **Who is Eligible?**

All VAST members, in good standing (current VAST member).

\*Please note that all officers and directors serve on a volunteer basis. Please ascertain that the colleague(s) you nominate do not express serious concerns regarding volunteer service time or have conflicting priorities. The nominee for President-Elect must have served previously on the VAST Board.

### **Who May Nominate?**

Nominations are welcome from all VAST members. Self-nominations are always encouraged!

### **What Are the Position's Responsibilities?**

#### **The President**

President-elect, President, Past-President is a three-year commitment beginning in January 2020 through December 2022, as President-elect, Year 1; President, Year 2; and Immediate Past-President, Year 3. The President-elect, elected for a one-year term, shall:

- Serve as the Co-Chairperson of the standing Conference (PDI) Committee (working closely with the PDI Chair) for the purpose of planning, scheduling, and execution of the conference scheduled for the year of his/her term in office. The President, for a one-year term following the year serving as President-Elect, shall: a.) Maintain general oversight of the interests and activities of VAST, representing VAST to the public; b.) Preside over all business meetings of the general membership of VAST, of

- the Executive Committee, and of the Board of Directors;
- Prior to the first Executive Committee meeting in January, nominate committee chairs, editors, web master, and VAST representatives to other groups, which require approval of the Executive Committee followed by Board approval;
- Prior to the first Board meeting in January, develop the annual budget in cooperation with the Treasurer and Executive Director, and develop the calendar for VAST Board meetings;
- Represent VAST at conferences of other professional organizations such as NSTA (national and regional);
- Serve on the Standing Conference Committee; and
- Perform other duties incidental to the office.
- The Immediate Past-President, for a one term following the year serving as President, shall:
- Be available for advice and counsel to see that programs and projects are continued under the new leadership;
- Chair the nominating committee for elected offices of VAST;
- Attend (or appoint a designee to attend) the National Congress on Science Education.

#### **The Vice President**

The Vice-President, elected for three years, shall: a) Oversee all committees, as directed by the President, except the Board of Directors and Executive Committee; b) Maintain a log of meetings and activities of each committee; c) Keep committee chairpersons aware of their responsibilities and if necessary, remind them of expectations; d) See that the VAST handbook is updated for distribution as early as practical each calendar year (including appendices) and if necessary, remind various leaders of their responsibilities; and e) Advise and assist the President as needed.

#### **The Regional Director for Regions I, III, V, and VII**

A Regional Director, elected for two years, shall: (**See the Regional map**). Find your county or the closest large city. Each Director represents one of eight geographic regions established by the Virginia Department of Education.)

- Be elected in even years if their region number is an even number and on odd years if their region number is an odd number;
- Promote membership in VAST in their region;
- Promote professional development activities in their region;
- Participate actively in VAST functions, including Professional Development Institutes, publications, and awards.



## **VAST PDI WORKSHOPS ON THE 2018 SCIENCE STANDARDS OF LEARNING AND THE 2019 SCIENCE CURRICULUM FRAMEWORK**

**Sponsored by the Virginia Department of Education**

**Thursday November 14, 2019**

**3:15 pm – 5:00pm**

**At the VAST PDI in November**

October 18, 2018, the Virginia Board of Education approved the 2018 Science Standards of Learning. The Standards of Learning are a critical communication with the citizens of the Commonwealth, parents, the business community, and higher education, because the standards convey expectations and intended outcomes for K-12 education. Equally as important, the standards and the frameworks serve as the key guidance for instructional leaders and teachers of science (elementary, middle, high school) in planning science curricula and science programming. The 2018 Science Standards of Learning include significant edits to enhance clarity, specificity, rigor, alignment of skills and content, and a reflection of the current academic research and practice.

The purpose of these workshops is to inform teachers of the changes to the 2018 Science Standards of Learning and the 2019 Science Curriculum Framework. In addition the presentations are designed to provide teachers with an understanding of the instructional shifts needed to implement the standards and to support Deeper Learning. Classrooms that support the implementation of the

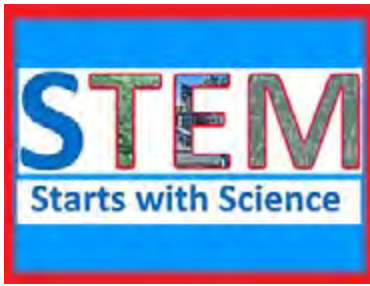
2018 Science Standards will focus on conceptual understanding versus an emphasis on terminology. Teachers will need to include opportunities in their instruction for students to engage in Science and Engineering Practices and to engage in common experiences in order to build conceptual understanding.

There will be three separate workshops for elementary school teachers, middle school teachers, and high school teachers. The three workshops will meet at the same time shown above in different rooms.

**Each workshop is limited to a maximum of 50 teachers. No Cost**

**A teacher must be registered for the VAST PDI in order to register for one of the VDOE workshops. Online registration opens on March 15 and closes on October 31.**

**Online workshop registration is required by October 31. On site registration will not be available.**



# Donna Sterling Institute

**Thursday November 14, 2019**  
**Hotel Roanoke and Conference Center**  
**8:00 am – 3:00 pm**

The Donna Sterling Institute is pleased to announce plans for the Sterling Institute to be held at the Hotel Roanoke on November 14, 2019 from 8am-3pm. You may have heard about Virginia Initiative for Science Teaching Achievement-VISTA. Donna Sterling was instrumental in her vision of problem-based learning as a means of teaching not only science but integrating science with math, engineering and technology. Students also learn to use language arts skills to communicate their findings with one another and in some cases school boards or town councils. Here is your chance to learn how to implement this powerful teaching vision and to become excited about your teaching.

The cost is \$100, (includes breakfast and lunch). The registration link is below. The VAST Thursday afternoon workshops and the PDI follow the Sterling Institute.

**Note: Registration for the Sterling Institute does not register you for the VAST PDI and Thursday afternoon workshops, nor does registration for the VAST PDI entitle you to attend the Sterling Institute.**

## **Title: The Power of Problem-Based Learning for Teaching STEM**

**Description:** Frank Niepold, teaching climate lead for NOAA's [Climate.gov](https://climate.gov) web portal will speak on climate resiliency. This will model

how to identify a current problem. Using a current science topic, climate science, the leaders will next demonstrate how to develop a problem-based learning unit that is adaptable for elementary through high school. Engineering, mathematics, and reading in the content area are all essential to PBLs - we won't break them out; we'll embed them! You'll find that PBLs strongly support the 5 C's: Critical Thinking, Creativity, Communication, Collaboration and Leadership, and Character. There will also be an example of a developed PBL.

In the afternoon, teachers will begin developing their own PBL on a topic of their choice. Teachers may work in groups or solo. Participants will be assisted by veteran PBL teachers. Participants may have the opportunity to have their PBL published.

Registration fee: \$100.00 includes breakfast, lunch, and materials.

Register online at 2019 Online Registration Form and Fees for PDI attendees, exhibitors, and Donna Sterling Institute.

<https://vast.wildapricot.org/Registration-Information>

Online registration is open from March 15 to October 31. On-site registration is NOT available on November 14.



## THURSDAY EVENING GENERAL SESSION SPEAKER

(Sponsored by National Geographic Learning/Cengage Learning)

Dr. Mike Gil, Ph.D.

Research Fellow, University of California, Santa Cruz &  
The National Oceanic and Atmospheric Administration (NOAA)



### “HOW SCIENCE CAN SAVE THE WORLD”



Science can save the world, as we know it – for us, for our children, for our grandchildren, for our species. However, science is powerless to protect and enhance the human experience if it is not embraced by the public. In fact, everyday people are the engine that drives science, through public support and through tax dollars. And a critical entry point to captivate the public with a personal appreciation for science occurs during the formative years of K-12 education. I am a marine biologist who went from hating what I thought science was as a kid to dedicating my life to science, which, I learned firsthand, is an exhilarating, creative process of discovery. In this talk, I will draw from my experiences on an unlikely path to a career in science and in my dual role as a scientist and science advocate to explore ways that we can make the often misunderstood and unjustly-politicized process of science accessible to all.

Dr. Mike Gil is a marine biologist, a TED Fellow, and a National Geographic Explorer. He has led research around the world: from coral reefs in the Caribbean, French Polynesia and Southeast Asia, to ‘microislands’ of plastic garbage, teeming with life, in the middle of the Pacific. Mike’s discoveries, covered by various national and international media outlets, are unified by a common goal: better understand how environmental change shapes natural ecosystems, which provide essential services to humankind. In addition to his scientific research, Mike is an award-winning science communicator with broad interests in connecting diverse swaths of the

public with the process of scientific discovery and all that it offers to individuals and to humankind. These interests are fueled by Mike’s own unlikely path from humble roots to a career in science. Thus, he founded and runs the 501(c)3 nonprofit, [SciAll.org](http://SciAll.org), which uses unconventional videos to diversify interest in science and STEM careers. By bringing mass online audiences along for the adventures of his career, including encounters with sharks, whales and other underwater wonders, Mike aims to deliver a timely message: science is an exhilarating process of discovery, accessible to all and in the service of all.







## FRIDAY MORNING GENERAL SESSION SPEAKER (Sponsored by School Specialty)

Dr. Kenneth Wesson, Ph.D.  
Educational Consultant: Neuroscience

**“STEM: If Students Don’t Learn the Way We Teach,  
Then Why Not Teach the Way They Learn?”**



We often hear educators proclaim, “I teach science” (or other content areas). However, more correctly stated, we do not teach subjects, we teach students, who arrive at our classroom doors with an ever-increasing range of personal backgrounds. Futurist Alvin Toffler was fond of saying that we must “learn, unlearn and re-learn” to survive, but instructional effectiveness in the 21st century classroom is also governed by this survival strategy. We frequently have a binary choice: Teach students how we were taught to teach or teach our students the way they learn. While we cannot choose the students we want, but we can choose the methods by which we actively engage the students we get every year.

Dr. Kenneth Wesson is a former faculty member and administrator in higher education. He delivers keynote addresses on the neuroscience of learning for educational organizations and institutions throughout the United States and overseas. His audiences range from early childhood specialists to college and university-level educators. His international audiences have included educators and administrative officers from six of the world’s seven continents. His research is frequently published and referenced in Parents Magazine, HealthNet, and the journal Brain World. He is an active member of Scientists without Borders and serves on the advisory boards for the Korean Institute of Brain Science, Kids at Science, and the International Association of STEM Leaders. He can be seen on PBS specials on human learning and the teenage brain. In 2017, Wesson was selected to receive the Marquis Who’s Who Lifetime Achievement Award.

He has been a keynote speaker/featured speaker for such diverse organizations as: the Summer Institute for the National Academy of Sciences; the (national) STEM Forum and Expo; National Brain Awareness Week; the American Society for Biochemistry and Molecular Biology; the National Symposium for Scientists and Engineers; the American Society for Microbiology; the Science Education Administrators and Policymakers Institute; the Distinguished Scientist Lecture Series; the Association of College and University Biologists; the International Brain Education Association; numerous state STEM conferences;

and the United Nations’ Department of Public Information and NGOs. This year, he will address several school boards associations and administrators’ leadership academies. His “Brain-STEM” presentations underscore the learner benefits of merging the latest research from cognitive science with the goals of STEM education.

“Each year, new findings in cognitive psychology and neuroscience will be infused into teacher preparation, curriculum, instruction, student assessment, and the classroom environment. The works of Howard Gardner (Multiple Intelligences), Daniel Goleman (Emotional Intelligence), Kenneth Wesson (Brain-considerate Learning), and Mel Levine (Schools Attuned) have been influential in reshaping the school classroom” of the future.”

Forecasting Independent Education to 2025  
National Association of Independent Schools

Wesson’s latest articles include: Saber Toothed Tigers and Stressed-Out Students: An examination of the neuroscience behind safe secure learning environments; “STEAMING and ST2REAMING Your STEM Programme”; “STEM Branches Out: Preparing for the jobs of the future”; Evidence-guided Strategies to Manage Safety Risks in Schools “Brain-STEM: Using Interdisciplinarity to Improve Our Minds and Our Schools”.





## SATURDAY MORNING GENERAL SESSION SPEAKER (Sponsored by Discovery Education)

Dr. Robert Corbin, Ph.D.  
Director-Global STEM Initiatives,  
Discovery Education Associate Professor at the  
University of North Carolina at Charlotte

***“STEM Dispositions Create Future Leaders and Innovators”***



Collaboration, Communication, Creativity and Critical Thinking do not come easily for any group from “Pre-K to Gray”. People rarely describe scientists, and technicians, artists and engineers as “people like me”. In this session participants experience how STEM dispositions engage and empower students affectively, cognitively and kinesthetically and consequently prepare them to solve the world’s most vexing problems.

Robert Corbin is a Doctor of Philosophy in Curriculum and Instruction with an emphasis in Science Urban Education and a National Board Certified Science Teacher serving as Director of Global STEM initiatives for Discovery Education. Robert served as Vice President of Learning Experiences at the Discovery Place Science Center in Charlotte, NC between 2007 and 2016. He served the Charlotte Mecklenburg School system as Earth Science Academic Content Coach from 2005 through 2007. He is a North Carolina Science Leadership Fellow, North Carolina LASER (Leadership Assistance for Science Education Reform) faculty member, NSRC (National Science Resource Center) faculty member, a founding member of the Bank of America Teaching Fellows and Affiliates program and science facilitator for the National Board Teacher Support Program for Charlotte Mecklenburg Schools. Robert also serves as a Facilitator for the NSF funded eMSS (E-mentoring for Student Success) science and math teacher support program Robert has taught a variety of technology and science courses in a variety of public high school, middle school and university settings for about 20 years. He currently serves as associate professor at the University of North Carolina at Charlotte and adjunct professor at Wingate

University. He is an Arts and Science Council Lifetime Achievement Award recipient, Christa McAuliffe Fellow, North Carolina Science Leadership Fellow, Duke University Sawyer Fellow, Time Warner Cable All Star Teacher, Ben Craig Award recipient, Omnicron Psi Outstanding Science Teacher, Whitehead Educator of Distinction, and NAGT Outstanding Earth Science Teacher of the Southeastern United States. Robert has written and received grants and awards from the Burroughs Wellcome Foundation, Sisters of Mercy Foundation, US Airways Foundation, Duke Foundation, PNC Bank, Foundation for the Carolinas, EPA, NAGT, Bank of America, First Union Bank, Wachovia Bank, Lowe’s Corporation, Toyota Tapestry Program, International Paper Corporation, Virtual High School Concord Consortium, Noyce Foundation, North Carolina Department of Public Instruction and Christa McAuliffe Foundation. He has written curriculum for Al Gore’s film *Inconvenient Truth*, Michael Pollan’s film *Botany of Desire*, the Weather Channel, Environmental Literacy Council, American Society for the Prevention of Cruelty to Animals, the Duke Talent Identification Program, North Carolina Department of Public Instruction and the Weyerhaeuser Corporation.



## CAREER-ORIENTED MAJORS

- Environmental informatics
- Environmental resources management
- Fish conservation
- Forestry
- Geography
- Meteorology
- Natural resources conservation
- Packaging systems and design
- Sustainable biomaterials
- Water: resources, policy, and management
- Wildlife conservation

#1

program in natural  
resources and  
conservation  
in the U.S.

(College Factual)



#1

program for  
forestry in  
the U.S.

(College Factual)



cnre.vt.edu

## GET READY TO MAKE AN IMPACT

Wherever there are big, complex issues involving natural resources and sustainability, we are there. And we're committed to preparing the next generation of leaders – like you.



# Still and 360° Photography in the Field and Classroom!

This is Part 3 of a 4 Part Series on this Expedition

Donna Sterling Awardee 2017

Becky Schnekser, Cape Henry Collegiate, Virginia Beach, VA

## Background

In July 2018, I was a member of Field Season 10 Expedition Team to the Boiling River with Andres Ruzo, Geothermal Scientist and National Geographic Explorer. One of my main tasks on this team was to collect 360° images along Shanay-Timpishka, the boiling river. My partner for this portion of the expedition was Wesley Della Volla, Director of Live Events and Experiences with National Geographic Society. Collecting images along the river was completed with a Ricoh Theta V 360° camera, tripod, and the most complex game of hide and seek I have ever played. The images we collected were to be of the natural surroundings, no visible human or human interactions. Sounds simple enough, right? We spend a lot of our childhood engaging in games of hide and seek, how difficult would it be in the rainforest with heavy foliage?

Well, it turns out a bit more complicated than we imagined. You see, 360° cameras can see just that-360 degrees. All angles, all sides, it is essentially all knowing. Our first attempt to evade being seen was to move out of the shot, take a short hike away from the camera and trigger it remotely. Piece of cake. More like, piece of rock--with the thick canopy cover of the rainforest, the bluetooth signal used to trigger the camera from my phone was weak. We quickly learned that I need to be about 3 feet maximum, away from the camera. Great, now what? Creative thinking and problem solving were of the utmost importance here. This caused me to be in precarious arrangements under rock ledges with tarantula nests, in thorned vegetation that would hold me captive, with hummingbirds, moths, and other critters flirting with my ears, and on sometimes in sinkholes partially filled with water. In one instance, I was laying flat on my back, hanging partially off of a rock, over a ledge. I call this my Mission Impossible pose and I can tell you, it was not comfortable but the images collected were worth it. The imagery collected would serve two purposes: tracking change over time and virtual reality tour creation of the area.

Through this experience of collecting imagery, I have been hyper focused on using images, whether still photography, 360 photography, or even videography in the classroom to elicit exploration, curiosity, and a personal connection to content.

## Classroom Connections

### Still images

Pictures are worth a thousand words, right? This is incredibly true and a powerful way to spark curiosity and conversation, enhance or introduce a concept in the classroom. Take this picture for instance.



Photo Credit: Becky Schnekser

It may seem simple at first, but this picture alone has sparked conversation about the taxonomy of birds, specifically raptors, spiraled us into a discussion of clouds and weather, as well as the word opaque and visual opacity. It segwayed into a story from Galapagos about observing the kleptoparasitism of frigate birds towards blue footed boobies and eventually sparked a conversation about indicators of global climate change. Yes, this one image I took in Galapagos.



Wesley Volla and Becky Schnekser pause to take mandatory selfie.



Or take this picture from Shanay-Timpishka.



Photo Credit: Becky Schnekser

Can you spot the leaf frog? I often just post this picture with no direct question at first. I use it to introduce biodiversity surveys. Students view this picture and write down everything they see. Once they notice the frog, we dive into adaptation discussions including mimicry and camouflage. With the abundance of leaf litter and detritus, we can quickly shift into deciduous forests vs tropical rainforest and climate. The possibilities are endless, really. It takes an image and organic discussion to take you where you want to go or allow students to take the driver seat.

There is always an added bonus, a connection, when the photograph was taken by you or someone the students know although arguably, any image will hold a substantial amount of power with your audience.

## 360° Images

With this particular expedition, I focused on gaining 360° images and harnessing their power within the classroom environment. These images have immersive power to bring your audience into a scene with you. Google Streetview is home to thousands of 360° images around the world that your students can use to explore. I use my own images, which is a luxury, to create Virtual Reality Tours using Google Tour Creator. These can be viewed

on computer or tablet screens or with VR goggles of any variety. I have used images of my own and Google Street View to orient students with locations we will visit on field trips, field expeditions, or places we are studying that we cannot travel to easily. It brings them to a specific location and you can experience it together. This all greatly depends on technology available to you, but can be used in many different ways for the same purpose--getting a feel for a specific location. Using Google Street View and Tour Creator, my students have even created their own virtual reality tours. My fourth graders were focused on architecture and geographical features of European countries. Their task was to create a tour highlighting these specific things about the European Country of their own choosing. They loved investigating, creating, and sharing their tours with one another. We traveled to nearly every European Country in a matter of days with this technology and 360° imagery. I can share these resources with you, just send me an email [expeditionsschnekser@gmail.com](mailto:expeditionsschnekser@gmail.com) or find me on Twitter @schnekser

## Students as photographers

Teaching students the power of images and then allowing them to be the photographers is an incredible experience as well. I use this often when completing biodiversity surveys, speaking about perspective of different animals, and how to accurately record the size of objects in the field. Take these two photos as an example.



Photo Credit: Becky Schnekser

You would not know with the picture on the left, exactly how large or small that particular specimen was, however, if you use something easy to pack while in the field, it is instantly scalable. We can identify the size of the specimen while we have used a recognizable object in the picture. In the field, you have to carry everything you need on your back, so the lighter and more compact your tools, the better. I always carry LEGO® figures with me for viewing.



this precise opportunity. What's also great about LEGO® mini-figures is that they can add some fun with the idea of perspective as well. Take this photo for example:



Photo Credit: Becky Schneker

This was taken in the Colca Canyon of Peru while on a solo trek cultural expedition. This one is just for fun with a mini-figure that looks like me. This one is used for perspective and looking at aspects of nature photography a little differently than just recording what you see and scale of specimen. My students enjoy using mini-figures to record nature and play a little bit with perspective especially when they see this picture from Galapagos.



Photo Credit: Becky Schneker

Seeing the figures in what seems like motion, they begin playing with how they can replicate this type of scenery, all which staying true to a nature photography focus. This extends their thinking to, what is the nature or scientific concept we are trying to capture and how can we incorporate a LEGO® icon within the art form? This oftentimes segways into stop motion video creation to demonstrate scientific concepts. If you allow it, this type of webbing of concepts and skills will surprise you and your students!

Whether it's to spark conversation and curiosity or

document field work, observations, and specimen, photography is a powerful avenue of learning for any age of student.



Becky walks into the cooler parts of Shanay-Timpishka to place the 360 camera. Photo Credit: Wesley Della Volla



Becky hiding from the 360° camera in order to get the perfect shot! Beneath this rock ledge are tarantula nests. Photo Credit: Wesley Della Volla





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## NEWS! FACEBOOK PAGE for Region 1

Are you interested in advertising or learning about events in the Region One area? Our Facebook page is an ideal vehicle for communicating to our membership. Please “like” our Region’s page and contact me if you would like to invite others to events at your school or venue. If you would like to take a more active role in the Region, please feel free to e-mail me as well.

Here is the link to the VAST Region I Facebook page. The address:

<https://www.facebook.com/rvascience/>

*Carolyn Elliot*  
Email Carolyn



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## NEWS! PDI for Region 4



### STEAM 6.0 – Retooled as TEAMS 2.0

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#### PROFESSIONAL DEVELOPMENT CONFERENCE

Presented by the Virginia Association of Science Teachers, Region IV

Thursday, July 11, 2019 – 8:30 a.m. – 2:30 p.m.

Location PWC School TBA

Speakers, Panels, and Presentations  
for All PK-12 Educators!

**Keynote Speaker:** TBA- expecting Ana Humphrey, a senior at Alexandria’s T.C. Williams HS who surpassed more than 2,000 other students in the Regeneron Science Talent Search for her research work on exoplanets, achieving a \$250,000 prize. She will be attending Harvard in the fall and is planning to major in astrophysics.

Breakout Session Topics and Panels: Research-based effective practices on teaming of disciplines for instruction; Integrating STEM & The Arts Instruction in Gifted Education Classes and by Elementary Specialists; Cross-Cutting Strategies for Math; STEAM Integration Resources workshops for both Elementary and Secondary Teachers; The Arts’ Role in STEM; 21st Century Workforce Preparation in STEMM (+ Medicine) Panel; Student Artists Pursuing STEMM Careers Panel- “Why STEAM?”; more! \* from VAST’s PDI Title for 11.14-16.2019

**Co-Presenter:** Prince William County Public Schools- Office of Student Learning & Accountability

**Working Lunch:** Vertical Alignment and Cross-Curricular Strategies (catering included in fee)

**Fees:** \$20/person \$10/current VAST/BNVCTM member  
Team of 4 from one school - \$70; w/ one VAST/BNVCTM member: \$60

**First 10 Schools registered will receive a copy of:**

**STEAM+ Arts Integration: Insights & Practical Applications,**

Edited by Jacqueline Cofield, 2017.

**Registration fees include:** refreshments, lunch, materials.

Educators: 6.0 Recertification points.

Please send all of the following information for each participant by Saturday, July 7th. Fees due at the workshop.

**Name:**

**School District:**

**School:**

**Subject Area/Grade Level:**

**Current VAST Member? Y/N BNVCTM? Y/N**

**Email address (Summer) ?:**

**Fee due from each participant- check payable to: “VAST” - cash/ check on-site. Teams- please submit registration form for each person. Please contact Susan for Special rate for Students in Pre-Service or if using school invoice.**

**EMAIL:** [Region4@VAST.org](mailto:Region4@VAST.org) to Susan Bardenhagen

**MAIL:** Region IV Coordinator, P O Box 2974, Manassas, VA 20108  
[CLICK FOR REGISTRATION FLYER](#)





## PROJECT LEARNING COMES TO REGION VII

**Donna B. Rowlett**  
**VAST Region VII Director**

Natural Tunnel State Park was the setting for a 2-day environmental professional development opportunity for Southwest Virginia's Region VII teachers. The workshop was sponsored by a grant designed to provide environmental education for teachers in under-served areas of the state.

On Friday evening, March 22, participants experienced Project Learning Tree's secondary education module, "Exploring Environmental Issues: Focus on Forests". We were fortunate to have selected Natural Tunnel S.P. as our setting as park officials had completed a prescribed burn during the week prior to our workshop. Natural Tunnel's Chief Ranger of Visitor Experience and PLT facilitator, Rachel Blevins, assisted with the activities and led participants on a walk through and around the burn areas explaining the method and benefits of prescribed burns. Other activities, both indoor and



outside, completed the evening workshop.

On March 23, teachers could select either PLT's PreK – 8 "Environmental Education" or the "Environmental Experiences for Early Childhood" training. The day included activities for teachers of all age groups of learners as well as plenty of time for networking among the participants.

Six school systems of Region VII were represented at the workshop including: Grayson, Lee, Scott, and Washington counties along with the cities of Bristol and Galax. In addition to Rachel Blevins, other PLT facilitators presenting during the workshop included Scott County educators, Christy Gardner, Dawn Williams, and Donna Rowlett. We are appreciative to Natural Tunnel State Park and their attentive staff for offering the use of the facilities as well as coffee and tea service during both days of our workshop.



**Donna B. Rowlett**  
**Science Dept. Lead/Mentor Teacher**  
**Gate City High School, Gate City, VA.**  
**Region VII Director, VAST**  
**Cove Ridge Education Council,**  
**Natural Tunnel State Park**  
**Project WILD Facilitator**  
**Project Learning Tree Facilitator**



## Donta the Dragonfly Explores the Dominion



**Donta the Dragonfly** – *Odonata infraorder*

**Cindy Duncan**

There are three stages in the life cycle of a dragonfly. The egg hatches into the larva (also known as a nymph), which molts up to 15 times before emerging as an adult. Unlike most other insects, there is no pupal stage and the transition from larva to adult is known as incomplete metamorphosis. Dragonflies decide to show themselves to us as soon as the weather starts to get warm enough for them. Spring arrived early in the Dominion this year and Donta was seen recently in Gloucester, VA at the Virginia Institute for Marine Science.

The Virginia Institute of Marine Science (VIMS) hosts three education centers (Chesapeake Bay National Estuarine Research Reserve, VIMS Marine Advisory Program, and VIMS Outreach) that provide a range of offerings for formal and informal educators, from professional development opportunities to teaching resources, field experiences and speakers for classrooms, and science events open to the entire community.

All seek to translate VIMS research and show the relevance of science as a way to investigate the Chesapeake Bay and beyond.

- CBNERR-VA and VIMS Marine Advisory Program (MAP) both offer professional development workshops. These range from single topic programs, like how to maintain an estuarine aquarium, to multiple day workshops focused on how to conduct a MWEE, and week-long courses exploring marine science topics. VIMS educators are also active at regional education conferences, providing hands-on sessions on teaching materials.
- CBNERR-VA offers in-class presentations and resources, as well as field experiences, to help teachers deliver MWEE experiences to their classrooms.
- CBNERR-VA and MAP each offer on-line teaching resources. These include marine science content and classroom-ready lesson plans reviewed by educators and scientists. Together, educators from these offices coordinate VA SEA (Virginia Scientists and Educators Alliance). This program helps marine science graduate students translate their research into data-rich lesson plans. Teachers help with lesson review and testing and the final products are shared via an Expo event and made available on the VIM website.
- Public Lectures, Discovery Labs, and Marine Science Open House events are made possible by the VIMS Outreach Program. Open to the community at large, these offerings are great ways for teachers to keep up with the latest in marine science topics, and to gather activity ideas for use in the classroom.

For more information on educational offerings available from educators on the VIMS campus, visit: CBNERR-VA <http://www.vims.edu/cbnerr/education/index.php>

VIMS Marine Advisory Program <http://www.vims.edu/research/units/centerspartners/map/education/index.php>

VIMS Outreach <http://www.vims.edu/public/index.php>

Written for Donata by Carol Hopper Brill, Ph.D.,  
Marine Education Specialist from the Virginia  
Institute of Marine Science.



While Donta was on her journey in Gloucester County, she came upon the most beautiful red maple. *Acer rubrum*, the red maple, also known as swamp, water or soft maple, is one of the most common and widespread deciduous trees of eastern and central North America. The U.S. Forest service recognizes it as the most abundant native tree in eastern North America. At 92 feet, the red maple became her new favorite place to explore. According to the information found in the book, *Remarkable Trees of Virginia* there are more red maples in the Dominion than any other type of tree.

This may come as a surprise to people who might think the it is the oak, but there is a reason for the red maple's abundance. For one thing, red maple can grow almost anywhere – in wet or dry soils, in low-lying areas and on mountaintops. Red maple is also an opportunistic species that increases significantly when other trees in its vicinity decline (or have been harvested or lost to fire.) Although it is itself highly susceptible to fire, red maple will come

back from the roots after a fire. It will also move into habitats where other trees have succumbed to Dutch elm disease, gypsy moth infestations, chestnut blight and other problems, and, for that reason, there are probably more red maples in some Virginia localities today than there was in pre-settlement Virginia. For more information on red maples or to view the tree, check out page 124 and 125 of *Remarkable Trees of Virginia*, By Nancy Ross Hugo and Jeff Kirwan. Photography by Robert Llewellyn.

*Cindy Duncan*

If you know of a great resource for improving environmental education in the Commonwealth and would like Donta to visit and highlight, contact Cindy Duncan at [cduncan@cbf.org](mailto:cduncan@cbf.org).





## Night Sky Network

# Watching the Late Spring Skies

David Prosper

*A view of Apollo 10's Lunar Module from the Command Module as it returned from maneuvers above the lunar surface.*



Photo Credit: NASA

Source: <http://bit.ly/apollo10view>

Late spring brings warmer nights, making it more comfortable to observe a good showing of the Eta Aquarids meteor shower. Skywatchers can also look for the delicate Coma Star Cluster, and spot the Moon on the anniversary of Apollo 10's "test run" prior to the Moon landing in 1969.

The Eta Aquarids meteor shower should make a good showing this year, peaking the morning of May 6. This meteor shower has an unusual "soft peak," meaning that many meteors can be spotted several days before and after the 6th; many may find it convenient to schedule meteor watching for the weekend, a night or two before the peak. You may be able to spot a couple dozen meteors an hour from areas with clear dark skies. Meteors can appear in any part of the sky and you don't need any special equipment to view them; just find an area away from lights, lie down on a comfy lawn chair or blanket, relax, and patiently look up. These brief bright streaks are caused by Earth moving through the stream of fine dust particles left by the passage of Comet Halley. While we have to wait another 43 years for the famous comet grace our skies once more, we are treated to this beautiful cosmic postcard every year.

While you're up meteor watching, try to find a delightful naked eye star cluster: the Coma Star Cluster (aka Melotte 111) in the small constellation of Coma Berenices. It can be spotted after sunset in the east and for almost the entire night during the month of May. Look for it inside the area of the sky roughly framed between the constellations of Leo, Boötes, and Ursa Major. The cluster's sparkly members are also known as "Berenice's Hair" in honor of Egyptian Queen Berenice II's sacrifice of her lovely tresses. Binoculars will bring out even more stars in this large young cluster.

May marks the 50th anniversary of the Lunar

Module's test run by the Apollo 10 mission! On May 22, 1969, NASA astronauts Thomas Safford and Eugene Cernan piloted the Lunar Module - nicknamed "Snoopy" - on a test descent towards the lunar surface. Undocking from "Charlie Brown" - the Command Module, piloted by John Young - they descended to 47,400 feet above the surface of the Moon before returning safely to the orbiting Command Module. Their success paved the way for the first humans to land on the Moon later that year with Apollo 11. Look for the Moon on the morning of May 22, before or after dawn, and contemplate what it must have felt like to hover mere miles above the lunar surface. You'll also see the bright giant planets Saturn and Jupiter on either side of the Moon before sunrise. When will humans travel to those distant worlds?

You can catch up on all of NASA's current and future missions at [nasa.gov](http://nasa.gov)



*Try to spot the Coma Star Cluster! Image created with assistance from Stellarium. Photo Credit: NASA*

This article is distributed by the NASA Night Sky Network, a coalition of hundreds of astronomy clubs across the US dedicated to astronomy outreach. Visit [nightsky.jpl.nasa.gov](http://nightsky.jpl.nasa.gov) to find local clubs, events, stargazing info and more.





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