

VDOE Science Update

March 13, 2015

NEWS

Augmenting Science and Special Educator Teams (ASSET) Academy

The Virginia Department of Education's Office of Science and Health Education and Office of Special Education Instructional Services, in partnership with James Madison University, will again sponsor a collaborative science-inclusion special education institute at the University's summer [2015 Content Teaching Academy \(CTA\)](#). This exciting and successful program, *Augmenting Science and Special Educator Teams* (ASSET), is designed for science and special educator school teams working together to enhance all student outcomes focusing on improved content understanding, pedagogical strategies, collaboration strategies, and networking. The CTA (and the ASSET program) will run from June 22 - 26, 2015.

The Virginia Department of Education will assume the cost of registration, graduate tuition (3 hrs.), lodging, and meals for all public school participants accepted into the program. Teachers from schools not meeting the state benchmark for accreditation in science will be given priority. School divisions are strongly encouraged to cover travel expenses for division participants as this cost is not assumed by the Department; however, this is not a requirement of the program.

Visit [Physical Science ASSET Academy](#), [Earth Science ASSET Academy](#), or [Biology ASSET Academy](#) for more information and registration.

Evolution Education

[Evolution Education](#) is a project organized by the [Cox Lab](#) in the [Department of Biology](#) at the University of Virginia. They are evolutionary biologists and educators who advocate for real collaborations between scientists and teachers to develop new, inquiry-based models for education in (and out of) the middle- and high-school science classroom. The program is based on three core principles:



- K-12 science education is failing to teach evolution unequivocally as a central principle in biology
- Students *learn* science best by *doing* actual science
- Teachers become more effective educators when they participate in authentic scientific research

Please visit each of the sites to receive more information about important

- [2015 Teacher Fellows - Application is now open! Apply before April 15, 2015](#)
- [2015 Teacher Workshop - Registration is now open! Register before April 15, 2015](#)

Evolution Education is a partnership of UVA's [Curry School of Education](#), [Mountain Lake](#), [Biological Station](#), [Golden Apple Foundation](#), and the [Virginia Department of Education](#) with funding from the [National Science Foundation](#).

Prepare Now for Week of Environmental Education

National Environmental Education Week (EE Week), the nation's largest environmental education event, inspires environmental learning and stewardship. Highlighting the theme "Greening STEM: Surrounded

by science," EE Week (**April 19-25, 2015**) connects educators with environmental resources to promote K-12 students' understanding of the environment.

The environment is a compelling context for teaching STEM (Science, Technology, Engineering and Math) as it provides teachers with a diverse range of real-world challenges that engage students in meaningful hands-on opportunities to apply and reinforce STEM concepts across multiple subject areas, according to the event organizer, the National Environmental Education Foundation.

EE Week provides a range of resources at <http://eeweek.org/learning-center>. Register for EE Week at <http://eeweek.org/register.htm> to receive educational materials and unique opportunities.

Teacher Resources

"The Spawn"

This film wins first runner up at 2015 RVA Environmental Film Festival VCU alumna Melissa Lesh has filmed yet another beautiful, award-winning documentary. Produced by VCU Life Sciences' Outreach Education Coordinator Anne Wright for the Science in the Park website, and narrated by former James River Park Manager Ralph White, [the film](#) documents the plight and management of blueback herring and American shad in the James River. The film features interviews with Michael Odom, Hatchery Manager of the Harrison Lake National Fish Hatchery, and Alan Weaver, Fish Passage Coordinator for the Virginia Department of Game and Inland Fisheries

"The Spawn" would be a good film to capture students' attention about human impact (positive and negative) on the environment.

Google Earth Pro Is Now Available For Free

Google has announced that Google Earth Pro is now available for free. Google Earth is a geospatial software application that displays a virtual globe, which offers the ability to analyze and capture geographical data. Google Earth was created after Google acquired CIA-funded Keyhole Inc. in 2004. Under Keyhole, the application was known as EarthViewer 3D.

Visit [Google Maps](#) to learn more.

MyNAP

MyNAP is a login service that lets you download free PDFs on the National Academies Press (NAP) website, and offers an interface where you can maintain a list of NAP books that you have downloaded or purchased, books that you have added for later, bookmarks that you have made in OpenBooks, and see books recommended for you.

You can download titles such as How Students Learn Science, A Framework for K-12 Science Education, and more. Visit [MyNAP](#) for more information.



AAG Offers Geography Resources for Teachers

The Association of American Geographers (AAG), an AGI member society, offers an array of web resources for K-12 and college-level instruction. These materials support geographic approaches to Earth science education:

* The Geographic Advantage (<http://geographicadvantage.aag.org/>), an educational companion for the National Research Council's "Understanding the Changing Planet," outlines teaching strategies and

geographic investigations that show students how geographers explore environmental change and sustainability.

* AAG's Center for Global Geography Education (<http://www.aag.org/cgge>), offers online modules for undergraduate courses in geography and related social and environmental sciences. All modules feature a conceptual framework, regional case studies, and collaborative projects.

* GeoSTART helps middle- and high-school students develop geography, Earth science, and spatial thinking skills using NASA Earth Observing Missions remote sensing imagery and related data. Go online (http://www.aag.org/cs/education/k12_and_teacher_education/geostart_teaching_earth_science) for free activities and materials.

AAAS Science Assessment ^{beta}

The assessment items on this website are the result of more than a decade of research and development by [Project 2061](#), a long-term science education reform initiative of the American Association for the Advancement of Science.

Here you will find free access to more than 600 items. The items:

- Are appropriate for middle and early high school students.
- Test student understanding in the earth, life, physical sciences, and the nature of science.
- Test for common misconceptions as well as correct ideas.

This website also includes:

- Data on how well U.S. students are doing in science and where they are having difficulties, broken out by gender, English language learner status, and whether the students are in middle school or high school.
- "My Item Bank," a feature that allows you to select, save, and print items and answer keys (requires [site registration](#)).
- A feature that allows you to create and take tests online using items from the item collection (requires [site registration](#)).

Intended primarily for teachers, these assessment items and resources will also be useful to education researchers, test developers, and anyone who is interested in the performance of middle and high school students in science.

Teacher Opportunities

Southern Virginia STEM-H Summit- April 1, 2015

At the Institute for Advanced Learning and Research in Danville, VA

This year marks the third Annual Southern Virginia STEM-H Summit. This event is hosted by the Southern Virginia Higher Education Coalition and provides an opportunity for regional students, educators, community and business leaders to come together for the promotion and betterment of STEM- H education in southern Virginia and beyond. K-12 educators attend a full schedule of workshops (certificates for CEUs are provided) on best practices, resources, and curriculum in STEM-H education, along with the Keynote Presentation and Southern Virginia STEM-H Education and Industry Achievement Awards Luncheon. Various educational vendors will be present, and time will be provided for networking with exhibitors AND industry attendees on potential collaborations.

Website: www.sovastem-h.org

Contact: jessie.vernon@ialr.org

2015 Biotechnology Educators Conference

Fralin Life Science Institute and Virginia Bioinformatics Institute at Virginia Tech are excited to offer the 2015 Biotechnology Educators Conference for high school and community college educators! The goal of the conference is to provide technical and content updates for science educators, including new applications in medicine, infectious disease, and agriculture.

The conference is July 29-31st. Participants may choose from an array of workshops and come together for 2 talks. On July 29th, there will be a pre-conference Biotech Boot camp available for educators new to biotechnology.

Registration opens March 1st (\$75, late registration starts May 1st- \$100). CEUs will be given.

For more information on registration, schedule, talk/workshop information, and housing options see <http://vbi.vt.edu/resources/biotech>.

Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST) – Nominations Open – Grades 7-12

The Presidential Awards for Excellence in Mathematics and Science Teaching is pleased to announce that the 2014-2015 cycle for grades 7 – 12 has begun and the nomination process has been opened. Nominations close on **April 1, 2015**.

PAEMST are the nation's highest honors for teachers of mathematics and science (including computer science). Awardees serve as models for their colleagues, inspiration to their communities, and leaders in the improvement of mathematics and science education. Since 1983, more than 4,300 teachers have been recognized for their contributions in the classroom and to their profession. If you know great teachers, nominate them to join this prestigious network of professionals.

Please consider nominating a teacher [here](#).

NASA STEM Mania

The [STEM Mania](#) is an online professional development opportunity running over the next 4 weeks. Teachers can sign up for one hour EPD on different topics relating STEM and sports. The flier is attached, with the link to the [registration site](#).

2015 K-5 Earth Science/STEM Teacher Leadership Academy – Deadline March 16, 2015

ExxonMobil Exploration and the American Geosciences Institute are pleased to announce that they will be holding the sixth annual Leadership Academy in Earth science and STEM for elementary school teachers in Houston, Texas, **June 15-19, 2015**. The program starts with a reception and dinner on the evening of the 15th and concludes at noon on the 19th.

The Academy will provide teachers with Earth science content, hands-on activities, resources and field experiences that they can use with their students in the classroom and with their colleagues in professional development settings. The program will be residential in Houston, and all travel, lodging and subsistence costs will be covered by a grant from ExxonMobil. We have space for **28 participants**,

and encourage teams of three or four to attend from each state or school district (although this is not a requirement).

Topics covered during the 40 hours of the workshop will include:

- Introducing Earth system science to students;
- Teaching Earth science with an emphasis on STEM and Science & Engineering Practices
- Investigations to help students understand the Nine Big Ideas in Earth Science (from the *Earth Science Literacy Principles*);
- Teaching the seven Energy Literacy Principles;
- Resources for learning and teaching Earth science (*K-5 GeoSource* website, *Investigating Earth Systems*, *Nine Big Ideas* and *Essential Energy Literacy Principles* videos, Earth Science Week Kits, and many others);
- The work of geoscientists in the energy industry;
- Using learning centers in classroom and workshop settings;
- Planning, conducting and evaluating successful Earth science workshops.

AGI is looking for teachers who already are, or who have the potential to become science professional development leaders in their home school districts. Please send names and e-mail contact information for nominees to Dr. Ed Robeck, Director of Education and Outreach, American Geosciences Institute, at ecrobeck@agiweb.org.

Environmental Research Experience Teacher Summer Program!

Any teacher interested in an NSF-funded Research Experience for Teachers at Penn State focused on environmental and Earth surface science during summer 2015 should visit <http://czo.stroudcenter.org/reu/> and/or contact Dr. Tim White (tsw113@psu.edu). The deadline for applications is **March 2**.

RET stipend: \$800/week for up to 9 weeks. Lodging and meals will be provided during the 10-day orientation. Penn State RETs will receive lodging and a meal plan for the duration of the program. Reimbursement of travel expenses will be negotiated with prospective RETs.

Want to learn more opportunities with PSU STEM for you and your students, [sign up for our K-12 newsletter](#).

Boyce Thompson Institute (BTI): Curriculum Development Projects in Plant Biology

Date: July 13-17, 2015

Application deadline: March 15, 2015, with rolling admission until all positions are filled.

Location: [Boyce Thompson Institute for Plant Research \(click here for directions\)](#) on the campus of Cornell University (Ithaca, NY).

Overview

Be inspired this summer at the Boyce Thompson Institute (BTI) for Plant Research as you join educators from across the nation and prominent scientists employing cutting-edge science in a weeklong exploration examining connections among the plant sciences, agriculture, bioenergy, biotechnology, environment, and genetics. The summer institute, Curriculum Development Projects in Plant Biology (CDP), brings together researchers and teachers to learn, design, and implement curricula that integrate Next Generation Science Standards, the study of plant model systems, and STEM learning. Participants

receive access to BTI-developed plant experiment kits, lesson plans, teaching materials, and faculty expertise. Visit [BTI's Education homepage](#) and the [CDP webpage](#) to learn more about this, and other, exciting teacher opportunities. We look forward to having you on campus in July!

Eligible participants: Informal science educators, in- and pre-service 7-12 grade science teachers, and community college faculty. **Please note**, the CDP summer institute is supported in part by the National Science Foundation (NSF) and United States Department of Agriculture (USDA); therefore, applicants must be either citizens or legal residents of the U.S.

How to apply: Visit the [CDP webpage](#), or [click here to apply](#).

What Can We Do Together: Creating Prosperous and Safe Communities

Dr. David Orr, Environmentalist, Political Scientist and Environmental Educator to Speak At Longwood

When: Thursday, April 2, 2015, 7:00 pm

Where: Jarman Auditorium

Visit [Longwood University's website](#) for more information.

Dr. Orr is the author of seven books, including *Down to the Wire: Confronting Climate Collapse* (Oxford, 2009) and co-editor of three others. He has authored nearly 200 articles, reviews, book chapters, and professional publications. In the past twenty-five years he has served as a board member or adviser to eight foundations and on the Boards of many organizations including the Rocky Mountain Institute and the Aldo Leopold Foundation. Currently he is a Trustee of the Bioneers, Alliance for Sustainable Colorado, and the Worldwatch Institute. He has been awarded seven honorary degrees and a dozen other awards including a Lyndhurst Prize, a National Achievement Award from the National Wildlife Federation, and recently a "Visionary Leadership Award" from Second Nature.

Student Opportunities

2015 Virginia BioGENEius Challenge sponsored by Virginia Bio

Virginia Bio is hosting a statewide competition to select finalists for the International BioGENEius Challenge to be held in Philadelphia PA in **June 15-18 2015**.



The Virginia BioGENEius Challenge is a competition for high school students doing research in the following categories biotechnology, agriculture and/or industrial and environmental science. The finalist(s) from the Virginia BioGENEius Challenge will be selected to attend the U.S. National BioGENEius Challenge held in Philadelphia, PA in June 2015.

The Virginia BioGENEius Challenge finalist will receive a trip to compete at the U.S. National BioGENEius Challenge. All International finalists (in each category) will compete and be recognized in front of thousands of industry professionals during the Plenary Luncheon at the BIO International Convention. The first place winner receives a \$7,500 cash award. Other awards include \$5,000 for second place, \$2,500 for third place, and \$1,000 for fourth place. Each remaining finalist will receive a \$500 Honorable Mention Award.

To apply please visit: <http://www.biotechinstitute.org/go.cfm?do=Page.View&pid=54>

Since the first Virginia BioGENEius Challenge in 2011, Virginia has been proud to have 3 students compete in the International BioGENEius Challenge: Riley Ennis, 2011; Samantha Marquez, 2013 and Adriel Sumathipala, 2014.

Explore the Outdoors Event – Sunday, April 19, 2015, 1-5 p.m., Free family fun!

It's spring, and that means it's time to get outside and [explore the outdoors!](#) Make tracks to Huguenot Park and the studios of the Community Idea Stations on **Sunday, April 19, 2015** from 1 PM to 5 PM for a **FREE day of hands-on fun exploring science and nature.**

The educational programs of the Community Idea Stations, [Science Matters](#) and [Ready to Learn](#), and [Chesterfield County Parks and Recreation](#) are co-hosting a special day in the park to give children and their families plenty of exciting outdoor experiences. Over forty local community groups with expertise in outdoor adventure, healthy living, and environmental science will engage you in activities ranging from nature walks to tree climbing, archery and fishing, gardening, camping, art making and much, much more. Curious George, Smokey the Bear and even a Mermaid will be some of the characters joining in the fun.

Come and check out your local **PBS and NPR stations** while touring the radio and television studios. You'll even get to see yourself on TV (the green screen that is!) Snacks, drinks and great food will be available for purchase. Join the fun at Huguenot Park and the Community Idea Stations at 10901 Robious Road, North Chesterfield, VA

For more information go to: <http://ideastations.org/explore-outdoors>

Virginia STEAM Academy

Virginia Science Technology Engineering and Applied Mathematics (STEAM) Academy is now accepting applications for Summer STEAM 2015.

Summer STEAM is the Virginia STEAM Academy's signature summer offering intended to inspire and expose rising 6th-8th grade students from across the Commonwealth to STEAM content, applied learning, and leadership-developing activities. This is their third year of offerings. There is no cost to attend.

Please visit <http://vasteam.org/summer-steam> to view program offerings and application process.

Applications are due March 24, 2015.

The Virginia Museum of Natural History has an exciting opportunity for middle school students!

VMNH would like to invite you to register for one of our upcoming Smithsonian Science How live, interactive webcasts. Each webcast will align with the Virginia Science Standards of Learning and will focus on connecting students to scientists, increasing students' understanding of science, and inspiring students about STEM education and careers. To learn more, go to: <http://www.vmnh.net/smithsonian-science-how>


SMWV Summer Camps

The Science Museum of Western Virginia is pleased to offer a full summers' worth of camp programs for PreK – 9th grade students! These programs occur at the Museum (with the exception of our VTC Medical

Research Camp for middle school-aged children), where children will spend their days doing hands-on science under the supervision of experienced educators.

Registration for camps will open on March 1 at <http://smwv.org/summer-camps/>. If you have any questions about any of our summer camps, please contact Miriam Musco, Director of Education, at 540-342-5776 or mmusco@smwv.org.

Highlighted Superintendent's Memos

- MEMO 011-15
[Presidential Awards for Excellence in Mathematics and Science Teaching \(PAEMST\) Program](#)
- MEMO 025-15
[Request for Proposals \(RFP\) for 21st Century Community Learning Centers Competitive Grant Program](#) 
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Articles

[Why science is so hard to believe \(Washington Post\)](#)

Joel Achenbach is a science reporter at The Post. A version of this essay appears on the cover of National Geographic's March issue. There's a scene in Stanley Kubrick's comic masterpiece "Dr. Strangelove" in which Jack D. [read more](#)

[Planning And Carrying Out Investigations: An Entry To Learning And To Teacher Professional](#)

[Development Around NGSS Science And Engineering Practices](#), Richard A. Duschl, Rodger W. Bybee, International Journal of STEM Education, December 2014.

[Project-Based Science: Engaging Students In Three-Dimensional Learning](#)

Joseph Krajcik, The Science Teacher, January 2015.

[Sustainability in Science Education? How the Next Generation Science Standards Approach](#)

[Sustainability, and Why It Matters](#), Noah Weeth Feinstein, Kathryn L. Kirchgasser, Science Education, January 2015.

As always, please contact one of VDOE Science Team if you have questions.

Barbara Young (Barbara.young@doe.virginia.gov)

Jim Firebaugh (jim.firebaugh@doe.virginia.gov)

Eric Rhoades (eric.rhoades@doe.virginia.gov)

Eric M. Rhoades, Director

Office of Science and Health Education

Division of Instruction

Virginia Department of Education

Office (804) 786-2481

Fax (804) 786-1703

[Science Resources](#)