Members receiving the Science Matters eBlast: 6,584

This issue of the Science Matters eBlast is filled with Pre-K through high school opportunities and resources for both teachers and students. Please share the eBlast with your colleagues. All eBlasts are archived in the Content Repository of the SAS Science Learning Community.

Mark Your Calendars – PSTA Convention: November 30 – December 1

Registration for PSTA in State College is open and can be completed online. Exciting workshops will be held on both days and the PSTA Leadership Conference will be held on Thursday, November 30. The focus on the PSTA Leadership Conference will be on E-STEM, Increasing Student Achievement Through E-STEM. Sessions will be held for all grade levels, birth to pre-K to elementary to middle school to high school. Registration for PSTA and the PSTA Leadership Day is available online at pascience.org.

Science Education in the News

The next generation of science education means more doing, and the Pennsylvania Science Curriculum Framework is intended to get students thinking and acting like scientists. The Hechinger Report released an article on science education. One teacher stated, “It makes science so much more dynamic and active. You’re giving them a scenario and they’re getting their hands on materials right away. You say, ‘You guys are going to be the orchestrators of this potential solution.’”

Six school districts in western Pennsylvania have formed the Western Pennsylvania Understanding by Design Collaborative to improve science curriculum, STEM curriculum, and instruction. Districts include Grove City, South Fayette, Quaker Valley, Hampton, South Butler and Gateway, with the hope of growing the number to 10 districts. The collaborative includes 60 science teachers – 10 per school district – as well as participating administrators. The Grove City Allied News reported on the collaborative.

Seven Lehigh Valley school superintendents are voicing their support of the Da Vinci Science City proposal in the Allentown Morning Call. They state that they are responsible for ensuring that the needed resources are in place to provide our children with an education that will prepare them for successful careers. The new Da Vinci Science City complex proposed for the Easton waterfront will help meet this need. A newer, larger facility that integrates living collections, hands-on investigations, inquiry and creativity will help meet Pennsylvania's new science and math standards, which emphasize the practices of science, engineering, and math as fundamental skills, integrated with big concepts and with specific factual knowledge from each discipline.

PDE is pleased to once again participate in the U.S. Department of Education’s Green Ribbon Schools (ED-GRS) program. The ED-GRS program was launched by the U.S. Department of Education to recognize schools that save
energy, reduce operating costs, create environmentally friendly learning spaces, promote student health, and provide environmental education to incorporate sustainability into the curriculum.

This marks the seventh year of the program. Last year, PDE received applications from schools, school districts, and postsecondary institutions seeking nomination for the U.S. Department of Education Green Ribbon Schools program. From those applicants, one school and one school district were nominated for the US Department of Education Green Ribbon School award. Coeburn Elementary School (Penn-Delco School District) and The School District of Philadelphia received the ED-GRS Award. This is the fourth year that postsecondary institutions are eligible to apply.

The applications for Green Ribbon Schools can be accessed at the Pathways to Green Schools’ website: [http://www.pathwaystogreenschools.org](http://www.pathwaystogreenschools.org)

**The Geological Models for Explorations of Dynamic Earth (GEODE)** project is a four-year, $2.8 million grant awarded to Penn State Associate Professor Scott McDonald. It is funded through the National Science Foundation (NSF) and extends earth science work that McDonald has been doing the past seven years as part of the Earth and Space Science Partnership. In collaboration with Earth and Mineral Sciences Professor Tanya Furman, McDonald and the ESSP plate tectonics' research team has been researching how young students understand plate tectonics and key ideas in science. It is an extension of work with Pennsylvania of Earth Science Teachers Association.

**NGSS Parent Guides** for Grades K-2, 3-5, 6-8, and 9-12, are available from Achieve. There are new versions now available in Spanish. The suite of guides illustrates how the standards are a powerful foundation to help students build a cohesive understanding of science over time. All of the grade-banded NGSS Parent Guides, including versions in both English and Spanish, are available at www.nextgenscience.org/parentguides. Feedback on the parent guides is welcome and suggestions can be sent to ngss@achieve.org, with the subject line "Parent Guide Feedback", with any comments or questions.

**Picking the Perfect Problem: The Heart of Project-Based Learning.** An excellent article focusing on eighth grade project based learning in an EL education school.

**NSTA** has released the first five books of its new STEM Road Map Curriculum Series for K–12 classrooms. The books are aligned to Next Generation Science Standards, as well as Common Core State Standards and the Framework for 21st Century Learning. They follow the theme of innovation and progress, challenging students to solve real-world challenges across STEM fields. The books are available through NSTA Press and the Science Store.

**New NSTA Book Puts a Human Face on Science and Engineering.** Teachers in the upper-elementary grades can use Eureka! Grade 3–5 Science Activities and Stories to help their students see scientists and engineers not as stereotypes wearing goggles and lab coats, but as real women and men. The title evokes Archimedes’s famous cry because the new NSTA Press book helps children discover who scientists are and what they do. It may even inspire them to explore STEM-related careers. At the book’s core are 27 lessons linked to children’s trade books that introduce students to real scientists and engineers. Some of these scientists and engineers are well known, such as astronomer Galileo Galilei and primatologist Jane Goodall; others are not, such as astronomer Annie Jump Cannon and engineer William Kamkwamba. Chapters focus on scientific processes, such as how to ask questions and define problems, plan and conduct investigations, or analyze and interpret data. Sample pages are located here.

**The Evolution of Teacher Conceptions of STEM Education Throughout an Intensive Professional Development Experience** is from the Journal of Science Teacher Education. The study explored how teachers’ conceptions of integrated STEM developed over the course of a 3-week-long summer professional development whose focus was on bringing integrated STEM education to science classrooms. Our findings revealed a total of 8 distinct
conceptions as represented by teachers’ drawn models that shifted in usage over the course of the 3 weeks. Overall, these conceptions started as simple models that grew to more complex models. The findings indicate the sensitive nature of conceptions of STEM integration that can be influenced by professional development experiences.

**How a Penn State partnership reshaped science education.** Seven years ago, Katie Bateman, then a middle school science teacher in the Philadelphia area, started benefiting from the **Earth and Space Science Partnership (ESSP)**, a program funded by the National Science Foundation designed to help Pennsylvania science teachers build upon their understanding and teaching of big ideas in Earth and space science. Since then, she joined Penn State and has been part of the more than $9 million initiative aimed at reshaping the teaching and learning of Earth and space science in Pennsylvania. The professional development workshops were one of four components of ESSP. The other areas included creating a statewide organization (PAESTA) to continue the legacy of the project, researching how students understand Earth and space science concepts in an effort to promote more effective teaching and learning, and, finally, catalyzing change in introductory science courses at Penn State.

**Youth get healthy dose of science in Franklin County.** It might have been called 4-H National Youth Science Day, but it was a whole lot more for the young people who took the challenge of “Incredible Wearables” on Wednesday night in Franklin County, Pa.

**Mobile lab brings science to students.** The best part of the **Pennsylvania Farm Bureau’s Mobile Agricultural Education and Science Lab Unit** visiting the Line Mountain Middle School this week is the unique education it provides students like Ashlyn Brown.

**American Helicopter Museum & Education Center** hosts 2017 **Girls in Science and Technology Program**. GIST is a collaborative effort between **AHMEC**, the Girls Scouts of Eastern Pennsylvania and various industry and educational partners. It allows female college student mentors to share their knowledge and love of STEM with girls in grades three through 12 throughout the Philadelphia region. In turn, the college students are mentored by local leaders in STEM fields.

**Professional Opportunities**

**Toshiba and NSTA** are kicking off the 26th annual **Toshiba/NSTA ExploraVision program**, officially opening registration for entries. Sponsored by Toshiba and administered by NSTA, the ExploraVision program challenges participants to use problem-solving, critical thinking and team-building skills to imagine solutions to real-life issues. Student teams compete in groups based on their grade levels: primary (K-3), upper elementary (4-6), middle level (7-9), and high school (10-12). There are two winner phases to the competition – regional and national. The 24 winning teams from six regions across the United States and Canada will receive a Toshiba laptop for their school, and each member of the team will receive additional science and technology-related gifts. Student participants will have a chance to win a number of prizes, including $10,000 U.S. Series EE Savings Bonds (at maturity). Registration is now open until February 8, 2018 at ExploraVision.org.

**PA State Parks** continue to offer innovative, multi-modal educator workshops across the state (make sure you click the arrows to view what is happening each month!) New sessions for after the first of the year have recently been added. Participants will receive Act 48 credit. To be added to periodic newsletters, email Carissa Longo: calongo@pa.gov

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<td>Oct 19</td>
<td>Leave No Trace Trainer Course</td>
<td>Nockamixon State Park 9:00 – 3:00 each day</td>
<td>Rebekah Sheeler: <a href="mailto:rsheeler@pa.gov">rsheeler@pa.gov</a> 215-529-7307</td>
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<td>and Oct 20</td>
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<td>Oct 21</td>
<td>PLT GreenSchools Schoolyard Investigations Workshop</td>
<td>Tyler State Park 8:30 – Noon</td>
<td>Andy Walton: <a href="mailto:awalton@umtsd.org">awalton@umtsd.org</a> Bonnie Tobin: <a href="mailto:btobin@pa.gov">btobin@pa.gov</a> ($5 for</td>
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PSTA members, $23 for workshop and PSTA membership

Oct 21  Project Learning Tree Educator Workshop- Focus on FALL! Moraine State Park 8:30 – 3:00  Mike Shaffer: mishaffer@pa.gov 724-368-8811 ($20)

Oct 21  Project Learning Tree Educator Workshop Little Pine State Park $20; 8:30 -3:30  570-753-6005/6000

Oct 27  Project Wild K-6 Educator Workshop Prince Gallitzin State Park 9:00-3:30  Beth Garner: princeprogramssp@pa.gov 814-674-100 x105  $20

Oct 27  Pennsylvania Songbirds Workshop for Teachers Jacobsburg Environmental Education Center 8:00-4:00  FREE 610-746-2801 Must Register

Oct 28  Exploring the Highs and Lows of Landscapes: Demystifying Topographic Maps Earth and Mineral Science Museum, PSU 9:00-3:00  Free 814-865-1713 Additional Information

Nov 17  Project WILD 6-12 Educator Workshop Prince Gallitzin State Park 9:00-3:30  $20  Beth Garner: 814-674-1000 x 105 princeprogramssp@pa.gov

Conferences, PD Opportunities Calendar

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<td>October 14</td>
<td>Indiana University PA</td>
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<td>Nov 30-Dec 1</td>
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Grants, Awards, Contests, Professional Opportunities

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<td>PSSA / Keystone Exam Committee</td>
<td>Apply now for 2018</td>
<td>Information and Application</td>
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<tr>
<td>Presidential Award for Mathematics and Science</td>
<td>Nominations for K-6 teachers open Nov 2017</td>
<td>PAEMST website</td>
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Science Matters Information

If someone sent you this eBlast, you can become a member of Science Matters to receive it directly! Go to PSTA’s Science Matters website.

Science Matters is an initiative of the Pennsylvania Science Teachers Association and the National Science Teachers Association to promote quality science education, through the sharing of information, resources, and professional development opportunities. The Pennsylvania state coordinator is Dave Bauman: davbauman@pa.gov.