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K-16 STEM in the NEWS**34th Annual Women in STEM Held at BGSU**

"Women in STEM is an experience I will never forget. It has opened my mind to the world of science I never knew", stated one of the nearly 300 young women from northwest Ohio middle schools who attended the 34th annual Women in STEM program on Oct. 31 at Bowling Green State University.

Students spent the day exploring and performing experiments and hands-on activities in physics and astronomy, chemistry, biology, engineering, mathematics, and technology as they learned about the STEM fields and what STEM has to offer in high school and beyond. Presenters from a wide range of STEM professions offered breakout sessions and hands-on workshops throughout the day. Forty students from underrepresented populations were able to attend the event through sponsorship from BP.

"Women in STEM really opened my eyes to the opportunities and jobs I could do in STEM. I loved the fun activities that we did!" said another participant. Workshop session titles included: "A Day in the Life of a Certified Hand Therapist", "Exploring Marine Biology", "Using a Drone in Monitoring the Earth", and "Digital Media Mood Rings".

When asked her perception on the impact of the event, one presenter stated, "I think this event has a positive impact on students' interest and understanding of STEM. We are able to engage students in STEM activities



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and ideas. We are able to show the students how fun STEM can be and how it is not so black and white. We are able to show them several different avenues that incorporate STEM ideas."

The Northwest Ohio Center for Excellence in STEM Education at BGSU (NWO) organized the event. Sponsors for the 34th annual Women in STEM program were BGSU, BP, and NWO. Susan Stearns of NWO stated, "Women in STEM is a program that showcases female role models who have careers in the STEM fields. Exposure to these successful role models allow for the girls to learn it's possible and it's achievable for them to major in STEM fields in high school and college."

For more information please see the NWO website at www.nwocenter.org

Community STEM in the NEWS

Army Educational Outreach Project Program Awards New Projects

The Army Educational Outreach Program (AEOP), in collaboration with Battelle, has awarded grants to five organizations and technical associations to expand student participation in enriching STEM exploration and learning, particularly for underserved students. AEOP offers K - 16 students and educators a collaborative, high-quality, Army-sponsored programs that engages, inspires and attracts the next generation of STEM talent.

Through AEOP's suite of programs, students representing all proficiency levels and ethnic, economic and academic backgrounds participate in real-world experiences involving STEM disciplines. Army civilian scientists and engineers serve as mentors and guides, bringing young people directly into Army laboratories and introducing them to the various opportunities in STEM fields through hands-on experiences.

AEOP engages a network of partners through Strategic Outreach Initiative grants to expand student participation in enriching STEM exploration and learning, particularly for underserved students. AEOP's latest cohort of partners, including three new and two renewed grants, were selected specifically for their leadership in STEM learning and outreach to African-American, Hispanic, female, low-income and military-connected students. Bringing together the strongest thought and strategic partners also allows the Army's programs to better reflect the best of this diverse nation.



"The Army is committed to contributing to a technically skilled and capable workforce. Working with like-minded partners and networks, we have the potential to do this more effectively, leverage one another's strengths and reach a far broader and more diverse audience," Dr. Matt Willis, Director of Laboratory Management, Office of the Deputy Assistant Secretary of the Army for Research & Technology, said.

The U.S.'s STEM capabilities are critical to the nation's innovation, economic competitiveness and national security. Though the U.S. continues to make strides in STEM, research shows a clear and alarming erosion in the nation's STEM capabilities, evident in both the skills gap plaguing major industries and students' lagging achievement in mathematics and science compared to peers around the world. By leveraging the Army's strengths, and leaning on the strengths of partners, the Army has addressed this STEM crisis on multiple fronts, with promising results.



"Through hands-on learning, students see how they can excel in STEM careers," said Dr. Aimee Kennedy, Senior Vice President for Education, STEM Learning and Philanthropy at Battelle. "Whether in teams of peers or guided by a mentor, this kind of learning will help inspire the next generation of innovators."

Strategic Outreach Initiative grantees received awards to facilitate meaningful collaboration that will ultimately integrate with or enhance the suite of opportunities already offered by AEOP. The Northwest Ohio Center for Excellence in STEM Education (NWO) at Bowling Green State University will build upon a previously funded AEOP strategic outreach project to increase the number of underrepresented students participating in the Ohio JSHS in March 2018, and beyond. NWO will recruit and train approximately 200 students from underserved populations and their teachers from Toledo Public and Springfield Local School Districts to engage students in original scientific research and

STEM studies. Under this model, the cadre of teachers from the previous year's grant project will serve as mentors to newly recruited teachers. In addition, all participating teachers will be certified in Global Learning Observations to Benefit the Environment (GLOBE), an international science education program that promotes worldwide participation in data collection, data sharing, and the scientific process.

The other recipients across the country include Montana Tech, North Carolina Science, Mathematics and Technology Education Center, the Society of Women Engineers, and the University of Central Florida Solar Energy Center.



The Army Educational Outreach Program continues the Army's 50-year legacy of supporting a wide range of educational opportunities in science, technology, engineering and mathematics. In collaboration with strategic partners, AEOP strives to build a diverse, STEM-literate workforce and prepare all students to thrive. Learn more at www.usaeop.com.

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STEM Opportunities

BGSU Kids' Tech University



Registration is Open for Kids' Tech University, a four-session program that begins Saturday, Feb. 11, and ends Saturday, March 24 and is open to students who live within a one-hour driving distance of BGSU. To participate, children must be 9-12 years old as of Sept. 30, 2016. There is an \$90 registration fee to participate and

scholarships are also available.

Kids' Tech University is designed to spark children's interest in the fields of science, technology, engineering and mathematics by introducing them to scientists who work in those fields, and providing hands-on activities that let kids explore scientific concepts.

Feb. 3, 2018: "Global change microbiology: the microscopic organisms that fuel our planet's global carbon cycle"

Feb. 17: "Earth Through a Drone's Eye"

March 17: "Sci-Fi Comes to Life: When Parasites Control Host Behavior"

March 24: "Plants are what they eat too! The science of plant nutrient uptake and assimilation"

Online registration will be limited to 150 children, and is first come, first served. Register online at <http://kidstechuniversity-bgsu.vbi.vt.edu/>. Search for "Kids" Tech University @BGSU".

Kids' Tech University at BGSU is directed by Dr. Paul Morris, a BGSU professor in Biological Sciences. Scholarships will be available. Please contact Dr. Morris at Pmorris@bgsu.edu for more information.

Xcite Learning hosting a Two-day Workshop

Xcite Learning will be hosting a two-day workshop at The 577 Foundation in Perrysburg in January. The workshop is specifically designed for grades K-12 educators of ALL disciplines.



January 29 & 30, 2018

Project Based Learning (PBL). Join and discover PBL as a powerful and effective inquiry-based learning framework for K-16 classrooms across all disciplines. Find ready-to-use PBL units for your grade level and design your own PBL units. Participants will each receive the Buck Institute for Education (BIE) book entitled Setting the Standards for PBL along with other ready to use classroom materials. All participants will leave with a draft PBL design for immediate implementation into their classroom. Bring a team and develop an interdisciplinary PBL unit [team discounts available].

For this workshop and others please visit: <http://www.xcitelearning.com/join-us-.html>

The Captain Planet Foundation

The Captain Planet Foundation is accepting applications from schools and nonprofit organizations for its Ecotech Grant program, an initiative to support projects that motivate children through science, technology, engineering, and math while challenging them to re-imagine the way their world can be.



Grants of \$2,500 will be awarded to schools or nonprofit organizations for projects that use innovation, nature-based design, and/or technology to address environmental problems in their communities. Projects

should integrate environmental education with opportunities for children to solve real-world problems by using science practices and technology to help care for the environment. Projects may replicate successful models or create new and innovative approaches.

<http://www.captainplanetfoundation.org/>

Science Education Council of Ohio Science Symposium

The Science Education Council of Ohio (SECO) is a collaborative community that believes everyone deserves the benefit of a strong science education in order to engage with an ever-changing world.



The SECO annual Science Symposium theme is: DREAM Bigger!
January 29 - 30 2018

For more information: <https://scienceeducationofohio1.wildapricot.org/page-18207>

Crayola Creative Leadership Grant Program

Crayola, in collaboration with the National Association of Elementary School Principals, is accepting applications for the 2018 Creative Leadership Grant program. The program will award up to 20 grants of \$2,500 in support of innovative, creative leadership team-building programs at the elementary school level. Each winning program also will receive an in-kind grant of Crayola products valued at \$1,000.



Applications will only be accepted from principals who are members of NAESP.

For eligibility and application guidelines, see the Crayola website:
<http://www.crayola.com/for-educators/ccac-landing/grant-program.aspx>

Army Educational Outreach Program RESET

Research Experiences for STEM Educators and Teachers (RESET) provides educators with summer research experience at participating Army Laboratories. The goal of this enriching program is to reinforce teachers' content knowledge through research experience and interactions with Army and Department of Defense scientists and engineers. Selected teachers will participate in on-line learning as a cohort, with a subset of the cohort selected to conduct research on-site with a mentor Army scientist or engineer. At the completion of the program, teachers will be able to translate this knowledge and experience into enhanced science, technology, engineering and math research curricula and enriched learning for their students.



<http://www.usaeop.com/programs/stem-enrichment-activities/reset/>

The Back-To-School Code-A-Thon

January 26th-28th, 2018

The Back to School Code-A-Thon is a FREE 48 hour program that gives students an opportunity to use technology, research, and collaborate to address issues and problems confronting the human race on a global scale. Students will work together to learn to code HTML, CSS, and JavaScript while learning to use tools like GitHub to build a website that reflects their ideas and commitment to problem-solving. Prizes are available for the teams that create the top three projects in their location! This is an international event, and students will be able to speak, work, and learn with other students around the world via live video, web, and telecommunication technology!



- Learn web development in a collaborative environment
- Meet students from around the world
- Get international visibility
- Find solutions to real global problems using technology

Ohio Location:

Sandusky County, Neeley Center

This program is open to any student 13-18 years-old with a willingness to learn, work collaboratively, and who has a desire to address real global issues for the betterment of all mankind. If you are such a student, please join us for this event. Students will stay on site throughout the 48 hr program. You may select your location when you register.

To register go to our website or scan the code:

<http://we-connect-the-dots.org/register-for-codeathon-2018>

For information about the event visit our program registration website at <http://we-connect-the-dots.org/results-of-2017-codeathon/> or contact our team via email events@we-connect-the-dots.org or by calling **(631) 468-7475**.

BGSU Summer Camps

The Pre College Summer Academic Programs are open and ready for students to sign up.

Summer is the perfect time for pre-college students to explore their career interests. BGSU Pre-College Programs provides opportunities for students to experience the Bowling Green State University campus while expanding their knowledge, building life skills and exploring their interests. BGSU offers residential and day camps throughout the summer.

Overall Camp E-Mail and Website: www.bgsu.edu/falconyouth

- **Marine Biology Life at Sea:** www.bgsu.edu/lifeatsea
- **Marine Aquatic Explorers:** www.bgsu.edu/aquaticexplorers
- **Media Production Camp:** www.bgsu.edu/mediaproductioncamp

- **College and Career Readiness:** www.bgsu.edu/collegecareercamp
- **Future Med Camp:** www.bgsu.edu/futuremedcamp
- **Graphic Design and Design for Social Good:** www.bgsu.edu/designforsocialgoodcamp
- **Forensic Science:** www.bgsu.edu/forensicsciencecamp
- **Robotics:** <https://www.bgsu.edu/pre-college-programs/pre-college-certified-summer-academic-programs-and-summer-camps/academic-summer-programs/robotics-camp.html>

Google for Education YouTube Channel

Please see the Google for Education YouTube channel for new EDU in 90 episodes on quizzes with Google Forms and Google Keep in the classroom. These fun, bite-sized videos will fill viewers in on the latest products, programs, and classroom resources from Google.



<https://goo.gl/6DVyH1>

BiG Fab Lab

The BiG Fab Lab in Bowling Green is offering **25% OFF** New Memberships, Classes, and Gift Certificates until December 31st!

Use **Discount Code:** 2017Holidays
Handmade items and build kits are for sale in the retail space.

Visit the BiG Fab Lab any Thursday from 6-8pm for Open House! Additional classes and special events can be found online at: www.BiGFabLab.com!



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NWO STEM Activity

Poinsettia Chemistry

Make Your Own pH Paper

Ohio Standards Alignment

Grades 9-12 (Current Ohio ACS - Physical Sciences)

Grades 7-12 (Ohio Revised Standards - Physical Sciences)

What You Need (for each group of students):

- Poinsettia plant (several leaves for each group)
- 400 mL Beaker Or 16 oz. Glass Jar
- Boiling Water Or Microwave Oven
- Toothpicks Or Eyedropper
- Scissors



- Coffee Filters Or Filter Paper
- Vinegar
- Baking Soda Solution (2g / 200ml Water)
- Rubber Gloves
- Safety Goggles
- Paper
- Colored Pencils



What To Do:

1. Start by putting on gloves and safety goggles.
2. Tear or cut the red poinsettia petals into strips, and place the strips into a beaker or glass jar.
3. Add boiling water, just enough to cover the plant material, or add cold water to the jar and microwave it for about one minute.
4. Allow the mixture to steep like tea for about thirty minutes.
5. Remove the plant matter from the jar so you are only left with the poinsettia solution. Alternatively, strain the solution into another container.
6. Soak a coffee filter or clean filter paper in the poinsettia solution for a few minutes.
7. Remove the filter paper and allow it to dry.
8. Cut the dry filter paper (which should be a shade of pink) with scissors to make pH test strips.
9. To test the pH of a liquid, use an eyedropper or toothpick to apply a little liquid to a test strip or dip your test strip into small amounts of liquid.
10. Start by using the vinegar and baking soda solution as the first two tests. Each liquid will create a different color on the pH strips.

What to do continued on pdf file

Download a pdf of the complete hands-on activity by [clicking here!](#)

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Share Your Story!

Thank you for your support of NWO, our programs, our activities, and our partners. Please send us updates, press releases, and news of STEM happenings at your school, district, or organization. Please submit to nwo@bgsu.edu. We are always looking for great STEM education stories to feature in upcoming newsletters.

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