

NWO STEM Newsletter 8/19

NWO on behalf of NWO

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To: Lisa L Addis <laddis@bgsu.edu>;

Advancing science, technology, engineering, and mathematics education for people of all ages.



Vol. 11 Issue #8

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K-16 STEM in the NEWS

In This Issue

K-16 STEM in the NEWS

[Third Annual STEM Manufacturing Camp Held](#)

Community STEM in the NEWS

[Local Educator Conducts Research on U.S. EPA Research Vessel](#)

Third Annual STEM Manufacturing Camp Held

The third annual STEM Manufacturing Camp, "Making it!" was held on July 15th through the 19th in Bowling Green, Ohio. Designed for boys and girls aged 11-14, 30 campers learned first-hand at how things are made with close-up tours at local manufacturing plants and sites in northwest Ohio. The concept of the camp was originated by Sherrod Brown with the goal of exposing Ohio's youth to the valuable role that American manufacturing plays in building and maintaining the U.S. economy.

The weeklong camp began with a full day at Penta



STEM Opportunities

[STEM in the Park - Online Pre-registration now OPEN!](#)

[Code for Her Computer Science Mentorship Program](#)

[Presentation Proposals Are Now Being Accepted For The 35th Annual Women in STEM program](#)

[SMART Program](#)

[17th Annual Green Energy Ohio Tour](#)

[STEMucation Academy](#)

[Imagination Station is Gearing Up for New School Year!](#)

[Summer STEM Bucket List](#)

County Career Center, and included daily field trips to local manufacturing plants that included Owens-Illinois, Principle Business Enterprises, Northwest Ohio Cooperative Kitchen, and NSG Pilkington. The camp culminated at Northwood Industries, a precision manufacturing and fabrication company. Campers enjoyed hands-on activities and team building exercises throughout the experience.

Sponsors of the event included: The Northwest Ohio Center for Excellence in STEM Education at BGSU, Wood County Economic Development Commission, Otsego Schools, Bowling Green City Schools, Wood County District Library, Penta Career Center, Center for Innovation of Food Technology, Ohio Means Jobs, and Wood County Educational Service Center.

**NWO STEM Activity**

[Edible Soil](#)

Community STEM in the NEWS**Local Educator Conducts Research on U.S. EPA Research Vessel**

Amy Boros, a science teacher at Hull Prairie Intermediate School, recently stepped off the U.S. Environmental Protection Agency (EPA) research vessel Lake Guardian!

Boros was one of 15 educators chosen from more than 40 applicants to collect data alongside scientists from July 8 - 14, 2019 as part of the Center for Great Lakes Literacy's Lake Erie Shipboard Science Workshop.

"The experience exceeded my expectations," said Boros. "I learned a tremendous amount of information about scientific research and the health of Lake Erie that I can take directly back to my students, fellow educators and our community."

Thanks to facilitators from Ohio, Pennsylvania and Indiana-Illinois Sea Grants, the workshop provided teachers an opportunity to work alongside four scientists



on current Lake Erie research projects. Dr. George Bullerjahn from Bowling Green State University, Dr. Lorena Rios Mendoza from the University of Wisconsin Madison, Elizabeth Whitmore from Cornell University and Ben Alsip from the US EPA Great Lakes National Program Office guided educators in learning about the impact of human activities on water quality.

Teachers evaluated the presence of microplastics and microbial DNA and RNA in surface water and sediment, enumerated zooplankton as a proxy for productivity and measured chlorophyll to determine phytoplankton concentrations throughout Lake Erie's basins. Samples were analyzed in onboard laboratories or preserved for later processing in researchers' laboratories. Ultimately, educators will be able to take their experiences back to the classroom and inspire their own students.



"Educators were immersed in an intense week of Great Lakes science. They assisted with authentic data collection and processing that can be used to provide insight on the quality of Lake Erie's water. Using innovative sampling and monitoring equipment, teachers were provided with once-in-a-lifetime professional learning experiences to explore science up-close and personal," said Angela Greene, Ohio Sea Grant Education Specialist, who helped facilitate the workshop.

[\[back to top\]](#)

STEM Opportunities

STEM in the Park - Online Pre-registration now OPEN!

Go Green with STEM in the Park!
Because there is no Planet B!

Featuring the new ECO ZONE

SATURDAY, SEPTEMBER 28, 2019

9:30 a.m. - 2:00 p.m.

Perry Field House @ BGSU



[Click Here](#) for Online Pre-registration!

STEM in the Park will feature interactive displays and activities created by area universities, community partners, and local businesses to engage children of all ages in science, technology, engineering, and mathematics, featuring the new ECO ZONE with Earth-Centric Activities.

Join us for a family day of hands-on fun at Bowling Green State University, featuring everything from giant bubbles to edible DNA. Families will receive at-home STEM activities and free healthy snacks. You won't want to miss it!

Back by popular demand at **STEM in the Park** are the Robotics Zone, the Food Science Zone, the Digital Media Zone, the Science of Sports Zone and the H₂O Zone, which explores the science behind all of water's amazing

uses. A Roots to STEM Pre-K-2 Zone is also back this year, featuring activities that cater specifically to younger children.

For more information visit: www.STEMinthePark.org

Code for Her Computer Science Mentorship Program

CODE4her is the new computer science mentorship program for girls in **grades 5 through 8** organized by the Bowling Green Computer Science Department, BG Women in Computing (BGWIC) student organization under direction of their faculty advisor Jadwiga A. Carlson. The CODE4her mentorship program was initially sponsored by Google igniteCS. IgniteCS provided funding and resources for groups of college and university students to make a difference in their local communities through CS mentorship. In addition a generous donation from the Miller family allowed the program to begin and to continue.



Let HER learn about computer science at these 2.5 hour meetings held in Olscamp Hall 225 and Hayes Hall 020 on BGSU campus.

Five Sundays 1:30-4pm:

September 8
September 29
October 20
November 10
December 1

Each girl (5th through 8th grade) will work with the same BGSU student mentor and member of BG Women in Computing student group.

Cost is \$100 per mentee.

Registrations are accepted on a first-come, first-served basis!
Please see: code4her.org for more information

Presentation Proposals Are Now Being Accepted For The 35th Annual Women in STEM program

Wednesday, October 30, 2019 @ BGSU for 6th through 8th Grade Girls

The goal of the Women in STEM program at BGSU is to provide a rewarding experience for 6th - 8th grade girls that connects STEM education to the real world and sparks an interest in pursuing STEM majors in college and ultimately STEM careers.

Women in STEM provides young women with a positive experience at BGSU and offers them a variety of engaging hands-on activities that allows them the



opportunity to learn and interact with a wide variety of successful STEM role models. Please [click here](#) to apply to be a presenter.

For more information visit the website at: www.bgsu.edu/nwo/programs/women-in-stem.html

SMART Program

The Science, Mathematics, and Research for Transformation (SMART) Program application cycle will open Thursday, August 1, 2019, and will close Tuesday, December 3, 2019. If selected, SMART scholars will receive full college tuition and educational expenses, a monthly stipend while attending school, book allowance, health insurance coverage, and summer internships. The program guarantees employment as a government civilian doing STEM work within DoD.

SMART

SCIENCE, MATHEMATICS,
AND RESEARCH FOR
TRANSFORMATION

PART OF THE NATIONAL
DEFENSE EDUCATION PROGRAM



For more detailed information please visit: <https://www.smartscholarship.org/smart>

17th Annual Green Energy Ohio Tour

Friday, September 27 & Saturday, September 28, 2019

The Green Energy Ohio Tour:

- Is planned for and by Ohio clean energy advocates
- Connects novices, owners, installers, and technical experts
- Showcases homes, businesses, and public buildings
- Features a variety of technologies, including solar, wind, geothermal, battery power walls, EV's and energy efficiency



Offers guided tours and special learning opportunities <https://www.greenenergyoh.org>

STEMucation Academy

STEMucation Academy is an online professional development course designed to help K-12 mathematics and science teachers (K-12) integrate engineering process learning into their classroom.

This 16-week self-directed online workshop is uniquely suited for teachers who would like to learn how to implement a challenge-based learning methodology with an integrated engineering design process into their classrooms. Participants are trained to use engineering as a "context" to teach any standards-based "content" in a manner that engages students through the unit implementation. Upon completion, teachers obtain 45 contact hours of participation. Graduate credits may be purchased through Ashland University.

For additional information: www.SECOonline.org or STEMucationACAD@gmail.com

Imagination Station is Gearing Up for New School Year!

New and improved Science Festivals feature hands-on, engineering challenges for kids of any age and are great opportunities to engage your entire school. For a more personalized experience, our [Workshop on Wheels \(WOW\)](#) program can roll right into your classroom to fully engage your students in in-depth STEAM (Science, Technology, Engineering, Arts and Math) exploration.



Credit: Lorelyn Medina/Shutterstock



National Science Foundation

Where Discoveries Begin

It's the home stretch before school starts again - the perfect time to prime young minds for another year of creative problem-solving while inspiring a lifetime love of STEM. The National Science Foundation has it covered. This Summer STEM Bucket List includes online and offline resources, games, activities and more, all made possible with NSF support, that will keep families dialed into STEM learning now and throughout the year.

<https://nsgov.home.blog/2019/08/05/last-days-of-summer-stem-bucket-list/>

[\[back to top\]](#)

NWO STEM Activity

Edible Soil

This month's activity was featured at the 2018 STEM in the Park and is brought to you by the Nutrients for Life Foundation

What You Need

- Chocolate pudding



- Crushed Oreos
- Roughly chopped graham crackers
- Butterscotch chips or round tan cereal (ex. Kix, Reese Puffs)
- Green coconut (colored with green food coloring)
- Sprinkles (preferably a mixed variety with three colors)
- Gummy worms
- Small clear cups and spoons

What To Do

1. Prepare or buy chocolate pudding.
2. Have students fill their cups in the following order and explain what each ingredient represent:
 - Butterscotch chips represent bedrock. Bedrock is usually a light tan color and is made of rock from the compressed layer of soil above it. Plant roots do not reach this layer.
 - Chopped graham crackers represents a layer of parent material. A layer of parent material exists between bedrock and subsoil and can contain rocks. Organisms don't exist, and chances of plant roots entering it are low. This can be found 5 feet below, but it varies on location.
 - Chocolate pudding represents subsoil. Subsoil contains some nutrients, but it is also rich in clay. Subsoil can be found 2-4 feet below our feet.
 - Crushed Oreos represents topsoil. Topsoil is rich in nutrients, such as Nitrogen, Phosphorus and Potassium. Topsoil is essential for plant growth. Topsoil can be as deep as 2 feet.
 - Gummy worms represent worms! The topsoil is alive with organisms and organic matter.
 - Green coconut represents the grass and many plants that grow in the soil.
 - Sprinkles represents fertilizer. Plants take nutrients from the topsoil and need to be replaced with fertilizer. Fertilizers play an important role in keeping the soil healthy and in growing our food.

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

[\[back to top\]](#)

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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