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K-16 STEM in the NEWS

Another STUPENDOUS STEM in the Park!

Last month nearly 5,000 people gathered on the BGSU campus for the 7th annual **STEM in the Park**, a free, fun-filled community STEM (science, technology, engineering and mathematics) event designed for people of all ages. Coordinated by the Northwest Ohio Center for Excellence in STEM Education at BGSU (NWO), this year's event featured over 165 STEM-infused, hands-on activities ranging from creating bubbles in the new "Water Zone", petting iguanas, playing virtual golf, and witnessing large rare birds fly through the sky.



Coordinator and NWO Education Program Manager

Jenna Pollock stated, "The 7th Annual **STEM in the Park** was the best year yet with our new and expanded Zones! An all-new "H₂O Zone" included 12 new activity stations including a Bubble Foam Pit (facilitated by Spark! Learning), that was a huge hit for children of all ages and abilities. Also new was the "Food Science Zone", which proved to be a popular area where local nonprofit organization Food for Thought demonstrated Urban and Vertical Gardening and the Sylvania Historical Village engaged families in making butter the old fashioned way as part of their Science in the History Kitchen activity station."

The event continues to grow each year, with many new exhibitors and stations facilitating unique hands-on and inquiry-based STEM activities. One young attendee, after visiting the Verizon remote controlled robot exclaimed, "This is so cool! Thank you so much!"



The expanded "Science and Technology of Digital Media Zone" ramped it up with a Digital

[Education on Air: It Takes a Teacher](#)



Imagery Photo Booth, facilitated by BGSU's Department of Visual Communication Technology in partnership with BGSU's Digital Arts Department. They also

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hosted a Virtual Reality Animation Station that showcased amazing technology, which appealed to the older children in the audience.

For the fourth consecutive year, NWO reached out within the region and provided transportation grants to students from low-income neighborhoods where transportation is the main barrier. Nearly 200 students from Toledo Public, Lima City and Sandusky City Schools participated in the event, as well as children and their families from Adelante Latino Community Center in Toledo. **STEM in the Park** also provides free STEM activity cards to extend learning at home, as well as a catered lunch from local Toledo favorite Tony Packo's.



STEM in the Park was founded by Drs. Emilio and Lena Duran, both faculty members in BGSU's College of Education and Human Development, and seeks to increase public engagement in the STEM disciplines. "We find this event to be a true pleasure and privilege for our BGSU family to be able to provide people of all ages in our community and all over northwest Ohio and beyond with enjoyable and engaging opportunities to participate in hands-on STEM learning," stated Dr. Emilio Duran. Dr. Lena Duran added, "Each year this event amazes me! What a great day to be a proud BGSU Falcon! We are very fortunate to have a fantastic and passionate group of individuals as part of our team, and we love to hold this incredible event!"

NWO organizes the free event on campus for the entire northwest Ohio and southeast Michigan community. NWO is a partnership among a number of area universities, K-12 schools, and community partners who all come together at this event to showcase innovation and educational opportunities and promote positive attitudes toward STEM teaching and learning.

The STEM in the Park team is very grateful for the many volunteers and support from BGSU as well as the following sponsors:

Presenting Sponsors



Community Sponsors



General Sponsors



Community STEM in the NEWS

BiG Fab Lab Hosts Hydroponics Community Garden Project Meetup

What happens when you combine a highly innovative scientific gardening approach with a creative community of innovators who meet in a space designed to empower creativity and innovation? Mark Bowlus, Director of the BiG Fab Lab in Bowling Green, Ohio, is hoping the answer to this questions is: Great things! This fall and winter, the BiG Fab Lab is hosting what it hopes will become an annual hydroponics community garden project.

You may be wondering, "What in the world is hydroponics?". Simply put, Hydroponics is the science - and art - of growing plants without soil. "Hydroponics operates under one fundamental principle," explains Bowlus. "If you give plants exactly what they need, when they need it, in the amount they need, the plants will be as healthy as is genetically possible." With hydroponics this is an easy task; in soil it is far more difficult.

According to Simplyhydro.com, with the hydroponics approach, plants are grown in an inert growing medium, and a perfectly balanced, pH-adjusted nutrient solution is delivered to the roots in a highly soluble form. The growing medium is the material in which the roots of the plant are growing. Possible media include Rockwool, perlite, vermiculite, coconut fiber, gravel, sand and many more. All the nutrition comes from the nutrient solution (water and fertilizer combined). You can therefore, easily control everything the plants receive. The strength and pH of the nutrient solution is easy to adjust so that the plants receive just the right amount of food. The watering/feeding cycles can be controlled so that the plants get watered on schedule, as needed.



Through this increasingly popular, indoor-friendly growing method, the BiG Fab Lab hopes to bring together a diverse group of community volunteers who will meet at the Lab on Thursday evenings from 6-9 p.m. The project is free and open to the public. "Participants can just show up at the Lab on Thursday evenings and join the fun," explains Bowlus. "We're hoping for a diverse group of northwest Ohioans that includes students, families, professionals, science buffs, gardeners and chefs."

Bowlus says the meet-ups began on September 29 and will continue through winter. "This is an exciting opportunity for anyone with an interest in innovative growing techniques to contribute to the project and learn as they participate with a diverse group of people," he explains. "And as we design, build and install the hydroponics garden, we'll be creating a community resource for healthy, fresh produce - right here in the Woodland Mall."



The group will begin by discussing design concepts and the needs of the desired plants. Together they will draw up plans, build, install and plant the garden. The garden will be installed in the Woodland Mall atrium just outside the BiG Fab Lab doors, next to the Cinemark Theater. "We're hoping that other mall vendors, families, business and other community members will participate in any way they can," adds Bowlus. "That might be as part of the design and build, or maybe in helping with maintaining the garden and harvesting the plants."

In addition to meeting at the BiG Fab Lab, the group will be using many of the Lab's tools to complete the project, including: electronics, wood shop, metal shop, 3D printers and scanners and laser engraver.

Community members can join this fun and free community project on Thursdays from 6-9pm at the BiG Fab Lab. Interested parties can simply show up any Thursday that they're available. Much of the produce will be donated to area food banks. Some produce will be used by Woodland Mall restaurants. Sponsorship opportunities are still available for those wanting to support this innovative community project.

About BiG Fab Lab: BiG Fab Lab, LLC is a full service makerspace providing a fully-equipped creative space for engineers, artists, students, inventors and businesses in Northwest Ohio. Located in Bowling Green, Ohio, BiG Fab Lab provides equipment, classes, storage and studio space, plus personal assistance for a variety of crafting, design, manufacturing areas, and business incubation for its member community. To learn more about the BiG Fab Lab, call 419-971-4244 or visit www.BiGFabLab.com.

Top Photo: This scaled model depicts a tomato tower, the first piece to be built in the state-of-the-art garden.

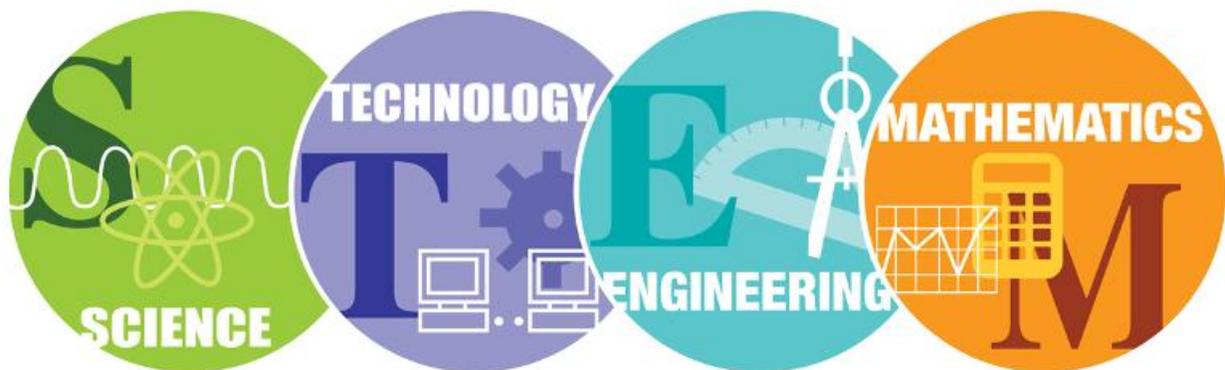
Bottom Photo: The BiG Fab Lab includes complete wood and metal shops, so the hydroponics garden components can be built onsite.

This article and photos submitted by Big Fab Lab.

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STEM Opportunities

NWO Symposium 2016: Registration is Now OPEN!



Northwest Ohio Symposium on Science, Technology, Engineering, and Mathematics Teaching

Saturday, November 19, 2016

8:30 AM - 4:00 PM

Olscamp Hall, Bowling Green State University

Bowling Green, OH 43403

Featuring the 2016 keynote speaker:
Dr. Jodi Haney

BGSU, Professor Emeritus

2016 NWO Symposium Program Is now available!
[Click Here](#) to download (pdf)

Online registration for Attendees is now open!
[Click here](#) to register

- Standard Registration:
 - \$35 Pre-registered
 - Undergraduates: \$5 Pre-registered
- Multiple Participant Discount: (5 or more participants from same school)
Schools with 5 or more participants are eligible for a reduced registration fee of \$30 per participant before November 15.

For more information visit the Symposium website at: bgsu.edu/nwoSymposium

Questions? Contact nwo@bgsu.edu

CODE 4 HER

Computer Science Mentorship Program

The BGSU Women in Computing (BGWIC) Department of Computer Science announce a Computer Science Mentorship Program for Girls.

This program will offer an opportunity for middle school students to experience computer science principles through hands-on and active learning activities. The program will utilize a one-to-two ratio and will be open to all current BGSU CS students meeting the program mentor requirements and interested girls from the



local area. The program will specifically target middle-school girls because early exposure to positive experiences with science and role models has been shown to have most impact on this age group.

Benefits to Girls include:

- Increases self-confidence.
- Provides an opportunity to improve communication skills.
- Improves interpersonal relationship skills.
- Provides a fun and engaging introduction to computer science.

"Let her learn to program with Lego EV3 Robots"

- Five 2.5 hour mentoring meetings to be held in Hayes Hall 020 on BGSU campus.
- Five Sundays 1:30 - 4 p.m.
 - January 22
 - February 19
 - March 12
 - April 2
 - April 23

Each girl will work with the same BGSU student mentor, computer science major and member of BG Women in Computing student group.

For more information and to register, please contact **Jadwiga Carlson**, BGSU Computer Science Department at BGSU at: jacarls@bgsu.edu

The Math in ACTION Tutoring Hub

The High School **Math in ACTION Tutoring Hub** is available at no cost to ALL students taking high school math courses such as Pre-Algebra, Algebra I, Geometry, Algebra II, Pre-Calculus, Calculus, Statistics, or any other math course your school offers.

Use online tutoring for individual assistance or make a request for a group in your class who want to work on problems together before an exam.

Visit our website at www.bgsu.edu/mathhub

Use our chat feature to ask questions or set up a video conference tutoring session



When:

Mondays - Thursdays: 3:30 - 10:00 p.m.
Sundays: 4:00 - 9:00 p.m.

Where:

BGSU's Main Campus
Olscamp Hall Room 120



(or online)

Contact Information:
mathhub@bgsu.edu

[Click Here](#) to download a flyer (pdf)

Ohio Department of Education

"BECOME A DIGITAL LEARNING EXPERT WITH THE NEW SUCCESS IN SIX"

The new Success in Six is a self-paced online learning program that utilizes the latest ways to use digital resources to support one-on-one learning, blended learning, personalized learning, differentiation and a host of other student needs. INFOhio, Ohio's PreK-12 Digital Library, offers the program at no charge to all Ohio educators - teachers, librarians, tech coordinators and administrators.

Each module contains an overview, and the program then guides teachers to sites and tools to explore more deeply. It finishes with activities that allow for the practice of new skills.

Complete one or all of these modules in any order:

- Develop Research Toolkit;
- Learn to Search Effectively;
- Discover High-Quality STEAM Resources;
- Engage Students with Reading Resources;
- Find Free Content for Blended or Flipped Classrooms; and
- Explore INFOhio's Differentiation Tools.

Complete a module to earn three contact hours, which most districts accept for CEU credit, and a digital badge. In addition, INFOhio partners NWOET and ideastream are offering Success in Six for graduate credit.

For more information, contact **NWOET** at nwoet@nwoet.org and **ideastream** at Ann.Ebersole@ideastream.org. Please send any questions or comments to support@infohio.org

National Academy of Engineering EngineerGirl Essay Contest

The National Academy of Engineering invites students (both boys and girls) in grades 3-12 to submit an essay with their engineering ideas for helping vulnerable and endangered animals.

For more information visit: <http://www.engineergirl.org/2017contest.aspx>

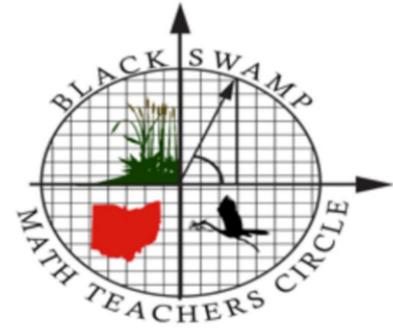


Black Swamp Math Teachers' Circles

Math Teachers' Circles bring together teachers and mathematicians to enrich the teachers' experience of mathematical problem solving.

There are four goals:

- Increase the confidence of math teachers in problem solving.
- Deepen teachers' content knowledge through exploring mathematically rich problems and develop an arsenal of techniques to solving unfamiliar and challenging problems.
- Form long-term professional relationships among teachers and mathematicians, through regular, highly interactive meetings.
- Provide support for teachers who want to bring richer mathematical experiences to their students.



The final 2016 session is FREE and open to K - 12 math teachers and college faculty/staff in northwest Ohio. **Space is limited.**

Participants will receive:

- Great professional development.
- Networking with mathematicians, higher education faculty and other classroom teachers.

BS-MTC meets from **6:30 - 8:30 PM** on **Wednesday, November 16, 2016** and will be held at:

Room 133 Life Science Building
Bowling Green State University
Bowling Green, OH 43403

For more information, please contact **Dr. Debra Gallagher**, Bowling Green State University, at dgallag@bgsu.edu or **419-704-1920**.

Ohio Oil and Gas Energy Education Program (OOGEEP) is Celebrating October's National Energy Awareness Month

Win a Cash Prize for your Classroom or School!

- 5 - 1st Place Prizes of \$500.00
- 5 - 2nd Place Prizes of \$250.00
- 5 - 3rd Place Prizes of \$100.00
- 50 - Honorable Mention Prizes of \$25.00



Submit a short video that highlights how everyday tasks and events are accomplished using petroleum based products.

Videos may be **submitted through October 31, 2016**, and the winners will be announced in November. All cash prizes will be awarded directly to the teacher or school that submitted the video for use in purchasing classroom supplies or perhaps for a class ice cream social or pizza party.

<http://oogeep.org/wp-content/uploads/2016/10/OOGEEP-National-Energy-Awareness-Contest.pdf>

For more information: <http://oogeep.org/teacher-students/>

Education on Air: It Takes a Teacher



Join Google on **Saturday, December 3rd** for: Education on Air, a **free online** conference from Google. Learn with educators from around the world.

There will be 100+ sessions around the clock celebrating #ItTakesATeacher:

America's sessions: 12pm ET / 9am PT

<https://www.google.com/edu/teacher/goo.gl/KZH5pQ>

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NWO STEM Activity

*This month's STEM activity features one of the many exhibitors that was at this year's **STEM in the Park**. More fun activities from STEM in the Park can be found on our website at: www.STEMinthePark.org*

Bendy Bones

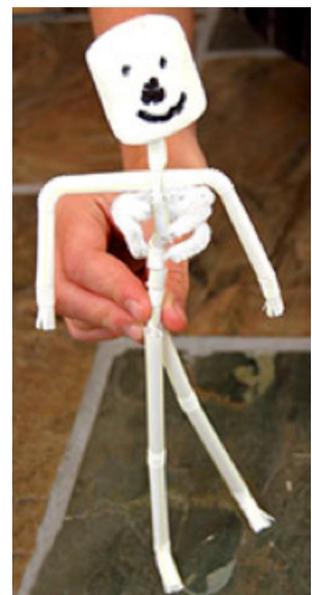
This month's Hands-on Activity is brought to you from BGSU Firelands

What you need:

- bendy straws
- 4 pipe cleaners (1 must be white)
- Scissors
- Hole puncher
- 1 large marshmallow
- Black marker

What to do:

1. Cut 4 pipe cleaners and 9 straws



- Straws: 5 small, 2 medium, and 2 large
- Pipe Cleaners: 2 uncut, 1 half cut, and 3 small (approx. 3")

2. The two largest pipe cleaners will form the legs and torso. Place one large straw piece over one of the legs, making sure a little pipe cleaner is poking out one end. Put the other large straw piece onto the other leg. Twist the remaining ends of the pipe cleaners together all the way up.

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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