

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



Vol. 11 Issue #2

February 2019

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K-16 STEM in the NEWS

Pathway to Success: Profile of Toledo School for the Arts

Toledo School for the Arts (TSA) is a public community or charter school focused on providing Ohio residents a college preparatory academic curriculum and an intense visual and performing arts environment. TSA opened in 1999 and is located in downtown Toledo, Ohio. TSA is sponsored by Bowling Green State University and is also a partner of the Northwest Ohio Center for Excellence in STEM Education at BGSU.



The Thomas B. Fordham Institute, the nation's leader in advancing educational excellence for every child through quality research, analysis, and commentary, as well as on the ground action and advocacy in Ohio, recently published a report on TSA in their "Pathway to Success" series. [Click here](#) to see the highlighted report.

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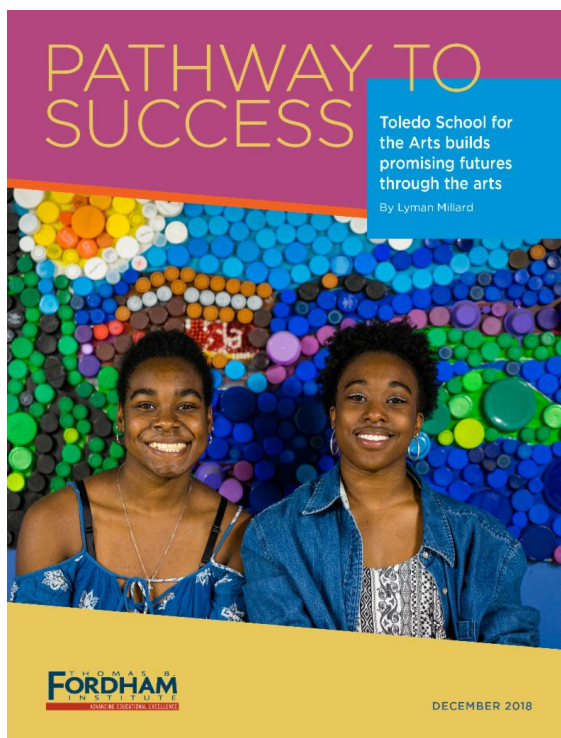
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Community STEM in the NEWS

Ask a teacher: How are you closing the gap in Computer Science?

This is a re-post, with permission, of a piece written by Sam Bodary for the Ohio STEM Learning Network. NWO is one of the seven hubs of The Ohio STEM Learning Network.



"It was actually quite unusual to see such a high percentage of why (students) don't go into technology:

intimidation...this is a way to break that." - Patrick Cummins, Bexley High School

[Code.org](#), in partnership with [Battelle](#) and the Ohio STEM Learning Network, is changing the face of computer science. Whether you are new to teaching computer science (CS) or have experience teaching other CS courses, the Code.org Professional Learning Program offers year-round support to begin teaching these courses.

Patrick Cummins has taught high school Physics and Chemistry for five years - but he's in the middle of his first year of Computer Science Principles. Thanks to his experience in the 2019-2020 cohort, he's prepared.

Using extensive teacher trainings and a free online curriculum, Code.org and Battelle have helped Ohio more than double the number of young women, Black, and Hispanic students taking the AP Computer Science Principles exam.

[Applications for the next cohort are open now](#) -The priority application deadline is March 31, 2019.

[Click here](#) to read the rest of the article!



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STEM Opportunities

Ohio Afterschool Network Best Foot Forward Conference

The keynote this year is Creating Connections that Count and offers 26 different workshops on a variety of interesting topics appropriate for all ages from elementary through high school! Many of these workshops are also Ohio-approved. This is an excellent chance to receive up to 5.5 hours of professional development in one day. [Click HERE](#) for more information.



Kids Tech University @ BGSU

Kids' Tech University (KTU) is a science outreach program now in its 8th season at BGSU that provides a true university experience for children by introducing them to a scientist and providing hands-on activities that let kids explore scientific concepts. The morning sessions feature a talk and extended question period with the invited speaker. Afternoon sessions will include a series of hands-on activities relevant to the session topic that the children can



participate in with their parents. Topics covered in this year's program will include the importance of human factors in the design of new technologies, the science behind our sense of taste, climate records in the earth's crust, and plant interactions with insects. To participate, children must be 9-12 years old as of Sept. 30, 2019. There is a \$100 registration fee to participate. However, scholarships support for registration fees is also available.

Please contact the KTU Program Director, Dr. Paul Morris, at: pmoris@BGSU.edu for more information.

Black Swamp Math Teachers' Circles

Math Teachers' Circles bring together teachers and mathematicians to enrich the teachers' experience of mathematical problem-solving. The 2019 sessions are FREE and open to K - 12 math teachers and college faculty/staff in Northwest Ohio. Space is limited and 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 the following dates: (no need to attend both). Meetings will in 120 Olscamp Hall

- Monday, February 25, 2019
- Monday, April 15, 2019

You can register for the sessions at: <http://www.bgsu.edu/nwo/programs/bs-mtc.html>

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

Discovery Lab - Global (DLG)

Discovery Lab - Global (DLG) would like to offer a unique project-based experiential learning opportunity this summer to high school students - especially those interested in one of these hi-tech STEM project areas:

- artificial intelligence (AI) - e.g. for search & rescue
- cybersecurity - e.g. to protect from ransomware and cyber-stalking,
- telepresence robotics - e.g. for distance collaboration
- wearable tech - e.g. for quality of life for the elderly,
- creating virtual worlds - e.g. Mission to Mars,
- 3D printed drone engineering - e.g. for emergency medical service delivery
- and more

THIS IS DESIGNED TO BE AN ACCELERATED HANDS-ON ENGINEERING EXPERIENCE: The program is a very unique, no-cost, project-based learning experience. Project requires up to 10-15 hrs a week.

To learn more about Discovery Lab -Global (DLG) & the SADE projects visit: www.discoverylabglobal.com

Ohio STEM Learning Network



The Innovative Leaders Institute (ILI) is now accepting applications for a new cohort of Ohio educators. The ILI is one of the few specialized training programs where leaders of innovative schools can learn from veteran STEM principals

APPLICATIONS ARE OPEN NOW. DEADLINE IS MARCH 11TH.

The ILI is open to two-person teams of school leaders. The team must include a principal or assistant principal plus an additional building-level leader. Fees for the ILI are \$1,000 per person. Each applicant must complete the online application. Application notifications will be delivered by March 30, 2018.

THE INNOVATIVE LEADERS INSTITUTE TAKES PLACE OVER SIX DAYS AND INCLUDES IN-PERSON SESSIONS AND A VIRTUAL DAY.

Dates for 2019-2020 Ohio ILI:

- Columbus: May 6 (evening) - May 8 (late afternoon) * September 26, 2019
- Virtual: January 30, 2020
- April 23, 2020

Locations for September and April sessions will be selected in consultation with the cohort.

For more information please see: <https://goo.gl/x23BtG>

Battelle/Code.org Professional Development

Applications are now open for Code.org's computer science professional development program for middle and high school teachers. Battelle is partnering with Code.org, a nonprofit computer science curriculum provider, to support

educators interested in bringing computer science to their schools.

Code.org's Professional Learning Program is an intensive, year-long learning experience for middle and high school educators interested in teaching Code.org's Computer Science Discoveries (middle school) or Computer Science Principles (high school) courses.

[Learn more here](#) about this valuable opportunity and check out experiences from previous participants.

2019 BGSU Academic Summer Camps

Discover summer opportunities on campus with BGSU Summer Academic and Youth Programs. There are many opportunities throughout the summer, including day/commuter camps, overnight camps as well as class credit opportunities.

Summer Academic Camps provide opportunities for students to experience the Bowling Green State University campus while expanding their knowledge, building life skills and exploring their interests.

B O W L I N G G R E E N S T A T E U N I V E R S I T Y



<https://www.bgsu.edu/pre-college-programs/pre-college-certified-summer-academic-programs-and-summer-camps/academic-summer-programs.html>

2019 Feed the World Summer Workshop

June 26 & 27, Marion OH

<https://ohiocorneducation.org/upcoming>



How is science contributing to the future of global food and energy security? Learn how advancing technologies help us produce more with less. You'll also take part in inquiry-based, hands-on science labs with an engineering design focus covering these topics: Biotechnology, Soil science, Water quality, Energy production, Sustainable agricultural practices. These lessons address Ohio Science Standards in Middle School and High School. Take home free supplies for your classroom. Shared hotel and meals included. Sponsored by Ohio Corn & Wheat.

Tech in Ag Columbus 2019

July 8 & 9, Columbus OH

<https://ohiocorneducation.org/upcoming>

See the latest technology on farms such as auto-steer tractors and crop sensors. Learn how farmers are using data to make sustainable decisions. Hear about current research projects in agriculture at The Ohio State University. Each teacher will receive ready-to-use modules and access to a set of crop sensors for classroom use. Shared hotel and meals included. Sponsored by the Ohio State University and a USDA-NIFA grant.

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NWO STEM Activity

Growing Crystals

This month's activity from Parents.com can be found at <https://www.parents.com/fun/games/educational/cool-science-kids-growing-crystals/>

This simple at-home science experiment lets kids create a fascinating chemical reaction--and make a sparkly memento, too.

BORAX, an old-school cleaning powder, is also a cool tool for teaching about minerals, the building blocks of rocks and earth. When lava hardens or water evaporates from a lake bed, the basic structures of minerals, called crystals, are often formed. Our experiment, in which pipe cleaners are submerged in a solution of borax and hot water, allows kids to see this process up close. As the mixture cools, glimmering crystals grow, and so do your child's scientific knowledge and curiosity. **Safety note:** Adults will need to supervise kids for this activity. Borax is generally considered safe for home use, but it should not be inhaled or ingested.



Form the Base

Bend pipe cleaners into cursive letters, trimming them and twisting on additional lengths as needed to form a name. For the starburst shape shown below, cut 4-inch lengths of pipe cleaner, cinch them in the middle with another pipe cleaner, then spread out the arms.



Grow the Crystals

1. Using **large paper clips** bent to form hooks, hang the pipe cleaner shape on a **chopstick** or skewer. Suspend it from the rim of an empty

- plastic or glass container**, making sure that it will hang without touching the bottom or sides. Remove it and set it aside.
2. Wearing **rubber gloves**, fill the container with a solution made from 3 tablespoons of **borax** (available at many grocery and home stores, shelved with household cleaners) per cup of **very hot water**. Stir gently to dissolve the borax.
 3. Rest the chopstick across the top of the container so that the pipe cleaner shape is submerged. Leave it undisturbed for 6 to 8 hours or overnight. Remove the finished shape and pour the solution down the drain.

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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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